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Sierra Tarascans

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SMITHSONIAN INSTITUTION
INSTITUTE OF SOCIAL ANTHROPOLOGY
PUBLICATION NO. 1

HOUSES AND HOUSE USE
OF THE
SIERRA TARASCANS

by

RALPH L. BEALS, PEDRO CARRASCO, AND THOMAS McCORKLE

[Title Page]
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LETTER OF TRANSMITTAL

SMITHSONIAN INSTITUTION,
INSTITUTE OF SOCIAL ANTHROPOLOGY,
Washington 25, D. C., June 21, 1944.

SIR: I have the honor to transmit herewith a manuscript entitled "Houses and House Use of the Sierra Tarascans," by Ralph L. Beals, Pedro Carrasco, and Thomas McCorkle, and to recommend that it be published as Publication Number 1 of the Institute of Social Anthropology.

Very respectfully yours,

JULIAN H. STEWARD, *Director.*

DR. C. G. ABBOT,
Secretary of the Smithsonian Institution.

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FOREWORD

000 The Smithsonian Institution published recently Doctor Charles Upson Clark's translation of the "Espinosa Manuscript," which he discovered in the Library of the Vatican.* This work contains the detailed report by a keen observer of conditions in Latin America as they were soon after the Spanish Conquest.

121 The Smithsonian Institution's Institute of Social Anthropology now begins to give an even more detailed account of life and conditions prevailing at the present time among the Sierra Tarascans in Mexico. It can readily be foreseen that not only may this study lead to improvement in these social conditions, but that it will be read by anthropologists of the future with the same type of interest which attracts them in the Espinosa Manuscript.

C. G. ABBOT,
Secretary, Smithsonian Institution,
June 22, 1944.

*Compendium and description of the West Indies, by Antonio Vázquez de Espinosa. Translated by Charles Upson Clark. Smithsonian Misc. Coll., vol. 102, 582 pp. 1942.

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PREFACE

000 The Institute of Social Anthropology is one of the many tangible responses to the growing sense of a need for closer cooperation and greater understanding between the peoples of the United States and of the other American Republics. It was created within the Smithsonian Institution to carry out cooperative research and teaching in the field of social anthropology as part of the broad program of Cooperation with the American Republics under the State Department's Interdepartmental Committee.

The purpose of the Institute of Social Anthropology is to send scientific personnel to those countries which have expressed a desire to undertake a cooperative program of teaching and research in social or cultural anthropology. Social science methods are developed and a body of important data is obtained through university training of selected students followed by a period of field training in connection with a research project. The field program is carried out by the cooperating institutions, but other persons or institutions with special interest in the project are invited to collaborate, so that advantage may be taken of many diversified skills in subjects relevant to the problems.

Research interest centers in broad, social science studies of selected communities which represent samples of the basic populations of the country in question. Such studies will be thought of as "anthropological" because they principally concern peoples whose blood is partly or wholly Indian and whose culture, though not strictly aboriginal, contains an important element of indigenous practices and is often still organized in native patterns. But the studies are not restricted to preliterate cultures, which is the traditional field of anthropology. On the contrary, they follow certain modern trends in the analysis of contemporary cultures, which they seek to understand in terms of the environmental, historical, and other processes that have produced

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PREFACE

000 their modern content and organization and of the potentialities they contain for future change.

An important part of the cooperative program of the Institute of Social Anthropology is the publication of research results. The publications will serve three purposes. First, the information they contain will contribute to a scientific formulation of the developmental and functional processes of culture. Particularly, it will contribute to an understanding of the formation of modern cultures. Second, the publications will provide specific and accurate data on which any successful action programs affecting the peoples concerned must be based. Third, they will afford an accurate picture of the peoples who constitute so great an element of many of the American Republics. Existing publications on these countries represent them disproportionately in terms of the city dweller or of special classes. There are extraordinarily few books from which the general reader can obtain an adequate and scientifically accurate account of the diversified peoples of indigenous ancestry.

114 One of the cooperative programs of the Institute of Social Anthropology is with the Escuela Nacional de Antropología of the Instituto Nacional de Antropología e Historia of Mexico. This program involves teaching anthropology, cultural geography, linguistics, and related subjects at the Escuela and field research among the Tarascan Indians of the State of Michoacán in Mexico. The research program for investigations among these Indians had already been formulated and partly carried out in recent years by the Instituto Nacional de Antropología e Historia in cooperation with the Departamento Autónomo de Asuntos Indígenas of Mexico and the University of California. It is fortunate that the Institute of Social Anthropology will be able to further the work begun by these institutions not only by direct participation in the field research but by publishing some of the results already obtained.

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114 The present paper, "Houses and House Use of the Sierra Tarascans," by Ralph L. Beals, of the University of California; Thomas McCorkle, of Berkeley, California; and Pedro Carrasco, of México, D. F., is the first monograph to result from the work of the Instituto Nacional de Antropología e Historia, the Departamento Autónomo de Asuntos Indígenas, and the University of California. Future monographs on other aspects of the program will be published under various auspices as opportunity arises.

"Houses and House Use of the Sierra Tarascans" is also the first of the publications of the

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114 Institute of Social Anthropology. Subsequent publications of the Institute will include papers covering the work in Mexico and elsewhere. These will be published in English, Spanish, or Portuguese, and in Washington, D. C., or in the country in which the research was done, as circumstances dictate.

JULIAN H. STEWARD, *Director*,
Institute of Social Anthropology,
Smithsonian Institution,
Washington, D. C.

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PHONETIC NOTE

104 The phonetic symbols used conform to the Tarascan alphabet approved by the Congreso de Filólogos y Lingüistas of Mexico in 1939 and employed by the Tarascan Project of the Departamento de Asuntos Indígenas. The alphabet is based on standard Spanish usage insofar as possible, with additional symbols added for Tarascan and with some clarification of the Spanish symbols as indicated below.

The vowels *a*, *e*, *i*, *o*, *u* have Spanish values. The vowel ʌ is intermediate between Spanish *i* and *u*.

The consonants *b*, *d*, *f*, *g*, *j*, *k*, *l*, *m*, *n*, *p*, *r*, *s*, and *t* have regular Spanish values. In addition the following symbols are used:

ts is the equivalent of English or Spanish *ts*.
č is the equivalent of English *ch*.
ŋ is used for the sound of English *ng* in "sing".
ɾ is intermediate between Spanish *l* and *r*.
ř is equivalent of Spanish *rr*.
š is equivalent of English *sh*.
tsʻ, *čʻ*, *kʻ*, *pʻ*, and *tʻ* are aspirated forms of the consonants given above.
f, *l*, and *ř* occur only in foreign loan words in Tarascan; *b*, *d*, and *g* occur primarily in words of Spanish origin but occur sometimes in purely Tarascan words.

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Houses and House Use of the Sierra Tarascans

By Ralph L. Beals, Pedro Carrasco, and Thomas McCorkle

INTRODUCTION

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The present paper is the first substantial publication resulting directly from the Program of Anthropological Investigations Among the Tarascans. The Program originated as a cooperative undertaking entered into by the Escuela Nacional de Antropología (formerly, Departamento de Antropología, Escuela Nacional de Ciencias Biológicas del Instituto Politécnico Nacional, now part of the Instituto Nacional de Antropología e Historia), the Departamento Autónomo de Asuntos Indígenas, and the University of California. The program provided for the cooperation of other interested institutions, and the collaboration of the Institute of Social Anthropology is a logical extension of the plan.

The general features of this Program are set forth in "The Tarascan Project: A Cooperative Enterprise of the National Polytechnic Institute, Mexican Bureau of Indian Affairs, and the University of California," by Daniel F. Rubín de la Borbolla and Ralph L. Beals (Amer. Anthrop., vol. 42, pp. 708–712, 1940). Two short papers based on field research have already been published: "The Diet of a Tarascan Village," by Ralph L. Beals and Evelyn Hatcher (Amer. Indígena, vol. 3, pp. 295–304, 1943), and "Games of the Mountain Tarascans" by Ralph L. Beals and Pedro Carrasco (Amer. Anthrop., vol. 46, pp. 516–522, 1944). Other papers are in preparation. These include "Cherán: A Sierra Tarascan Village," by Ralph L. Beals, which will appear as the second paper in the publications of the Institute of Social Anthropology. A number of other papers have also appeared which contribute to the objectives of the Program but which are the

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114 result of work which was undertaken independently. These include: "Tzintzuntzan-Ihuatzio, Temporadas I y II," by Daniel F. Rubín de la Borbolla (Rev. Mex. de Estud. Antrop., vol. 3, pp. 99–121, 1939), and "Exploraciones Arqueológicas Realizadas en el Estado de Michoacán Durante los Años de 1937 y 1938," by Jorge R. Acosta (Rev. Mex. de Estud. Antrop., vol. 4, pp. 85–98, 1940).

121 The purpose of the Program is to provide a coordinated and integrated plan of investigation of the Tarascan Indians for the dual purpose of: (1) Making a comprehensive scientific study of a little-known major Mexican Indian group, and (2) providing a body of fundamental data for the administration of the Tarascan area. For both purposes of the study, it is felt that certain non-anthropological studies are essential. As the Tarascans have been a farming and fishing people into a remote past, and since Spanish times began have also been a woodworking and cattle-raising people, a thorough understanding of the environment and its potentialities is essential, not only in order to understand the past and present culture of the Tarascans, but also to provide an adequate basis for intelligent administration. To this end, geographical, botanical, and zoological studies are planned as well as a thorough soil reconnaissance followed by more detailed studies of agricultural methods, problems, and potentialities, together with similar studies of forest, grazing, and animal husbandry techniques. In a similar fashion, understanding of the present population requires the collaboration of medical and public-health workers with the physical an-

[Ep. 1c]

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121 thropologist. At the same time, understanding of the contemporary culture and the processes which led to its formation requires a knowledge of the Tarascan past. The Program consequently includes plans for archeological research to illuminate the prehistoric period and for historical research to determine the events of the Contact, Colonial, and Republican periods.

Put in another way, the Program may be said

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THEORETICAL Background

The present paper is a frankly experimental effort to reconcile scientific and applied objectives in anthropology. The Tarascan Indians of Michoacán, Mexico, are one of the large Indian groups of that country and so are the object of great concern on the part of governmental agencies devoted to Indian problems. Housing is one of the usual subjects considered in programs of social welfare and, hence, is a suitable topic for discussion from this point of view. On the other hand, the Tarascans are very little known scientifically. Housing, as one of the important aspects of cultural activity, is, therefore, a legitimate subject of scientific study. The problem is whether these two purposes may be combined, either in the process of field study, or in the manner of presentation of data, in such a way as will be useful and satisfactory to individuals interested in either subject.

Interest in applied, or "practical," anthropology has been increasing in recent years among large numbers of anthropologists. In Mexico, results capable of application have long been regarded as one important end of all anthropological research in the country, although it must be confessed that there has been more tendency to consider purely scientific research to be a necessary prerequisite to the adequate solution of practical problems than has been the case with administrators in the United States. In the United States, the growth of interest in applied anthropology is evidenced in the recent birth of a journal devoted to this subject. Moreover, many anthropologists who have been reluctant to concern themselves with practical problems in studying the Indians of the United States, have confessed that it is undesirable and perhaps impossible to ignore the practical problems in such countries as Mexico where the Indian

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121 briefly to envision a pooling of the techniques of all the various branches of anthropology with those of the other social sciences and the more pertinent natural sciences to the end of understanding the Tarascans and their past and present problems as fully as possible. The Program is anthropological only insofar as anthropology provides the central core of essential studies and is the integrating discipline.

Theoretical BACKGROUND

question vitally affects the entire national welfare. It would, consequently, seem important to attempt a reconciliation of the objectives of "pure," or "scientific," anthropology and "applied," or "practical," anthropology.

As this paper will attempt to reconcile the two different approaches, a consideration of the abstract problems involved seems desirable. It is obvious that scientific ends in anthropology are often varied in character, but all depend to some extent upon the primary problem of description. It is obviously impossible to discuss anything related to Tarascan housing without first knowing its characteristics. Description, then, necessarily provides the raw data for any scientific objective. The amount of description necessary to any particular objective may, of course, vary, but unless a precisely limited problem is set in advance, the fullest possible description is apt to be of the widest use to the most people. To the applied field, description is likewise necessary. We cannot decide whether a people are adequately or poorly housed until we know how they are housed, what natural resources are available, or are used, and what skills exist for the utilization of these resources. So far, then, we may say in general that description of housing and house use is necessary both to applied and to scientific objectives, even though the amount and kind of description needed conceivably may vary.

As indicated, scientific study may be directed toward several objectives. One scientist may set himself the problem of discovering the history of the Tarascan house type, another may wish to learn the history of the Tarascan *use* of the house rather than the history of its construction. Yet another may wish to know what the functions of the house are within the total culture partly or

121 wholly aside from its use for shelter or storage, or he may wish to study the interrelations of the house and its use with other aspects of culture. It is possible, for example, that houses may represent prestige values or be symbols of status quite apart from any utility they may have. Yet others may wish to study the house from the standpoint of culture change: how changes in houses occur or how they are occurring, the effect of a dominant culture in close contact with Tarascan culture upon housing, and so on.

The foregoing suggests that an aspect of the scientific approach, aside from description, involves in part the setting of problems. However, this is not the exclusive property of the pure scientist; in the applied field, problems also exist or are set up. The nature and phrasing of the problems in the applied field, though, are apt to be different from those of the "pure" anthropologist, although in many cases they may be closely similar. In the applied field, the problem may be: "To what extent is Tarascan housing suitable for the needs of the inhabitants?" A pure scientist could well ask a similar question, but his purpose in so doing would be different. The pure scientist asking a similar question probably would be doing so in order to ascertain how good a "fit" the Tarascan had achieved in his adaptation to his physical environment. The student in the applied field would probably go somewhat further. He would perhaps ask: "What other type of house would be better suited to the needs of the Tarascans?" In addition, his final question might be either: "How may the use the Tarascan makes of his present house be improved?" or "How may the Tarascans be induced to change to a better type of house?"

Some of the questions of the applied anthropologist superficially seem to be of quite different character from those asked by the "pure" scientist, but it perhaps must be conceded that, theoretically, at least, they are capable of scientific approach. Even a problem involving change in use or type involves, for its successful solution, an understanding of culture processes and culture dynamics. At the same time, it is obvious that the applied anthropologist has introduced the whole field of values in his use of such terms as "suitable," "needs," "better," and "improved."

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[2] It must at once be asked whether these value terms are capable of scientific definition or not.

Before proceeding to the discussion of this point, it should be remarked that the pure scientist also frequently utilizes value terms in his work. Unfortunately, the "pure" scientist all too frequently either ignores this fact or is completely unaware of it. I have already pointed out that, in somewhat different context, the question, "To what extent is Tarascan housing suitable for the needs of the inhabitants?" could be a thoroughly respectable question in pure science if the objective were to determine the relations of the Tarascans to their environment. Anthropological literature of excellent scientific repute is full of appraisals of the adaptations primitive peoples have made to their environments. Actually, every such appraisal requires the existence of some sort of value standard on the part of the anthropologist. If he is a "pure scientist," however, he apparently considers himself above the necessity of explaining these values or else he takes them for granted. Actually, of course, he is often using "common sense." Other things being equal, a house that keeps its inhabitants warmer in cold weather, most people will agree, is a better adaptation than one affording less warmth. For the "applied" scientist, however, such "common sense" approaches are not permitted. He must make his value statements explicit and justify them.

Once an attempt is made to bring values into the open, the difficulties pyramid. How, for example, is one to determine what is "suitable?" An expression of an ideal on the part of the investigator usually will not be meaningful in terms of the realities of a given social situation. What is suitable housing is not alone a question of adjustment to climate. Realistically, what is "suitable" involves a complex balancing of what may be deemed most desirable taking into consideration such things as available raw materials, available technological skills, economic resources, and so on. It might be perfectly possible to arrive at the conclusion that, under given temperature and humidity ranges, a brick and frame construction with a slate roof, steam heat, modern plumbing, and a bedroom for every member of the family represents what is suitable, but among most Indian groups such as the Tarascans this

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121 would be mere fantasy at the present time. Not only would materials be lacking, but there would be an almost complete lack of skills available for the construction; economically, it would represent an unattainable ideal even for the wealthy, and the Tarascans would have no idea what to do with such a house if they had it.

There are not wanting opinions that the establishment of values is entirely too complicated a business to be feasible. This seems, perhaps, too drastic a view to take. Admittedly, it is not possible with our present techniques to arrive at a complete statement, and, for the purpose of the approach to be used in this paper, it is not particularly necessary that we do so. What should be possible is to establish certain minimal standards of value which will be generally accepted and some of which are susceptible of empirical determination. In the last analysis, the decision as to how far beyond the minima it is desirable or feasible to go with respect to the Tarascans is a matter to be decided by administrative agencies in terms of the data which may be presented by research. This is, of course, begging the question of the ultimate establishment of desirable values, but, for the present, we wish only to establish the main categories within which value problems exist. Using these categories, it should be possible for the scientist to present the problems and data in such a fashion as to serve the interests of both the "pure" and "applied" fields.

The following categories of value problems are offered as representing the basic assumptions on which we may proceed:

1. A reasonable number of square feet of floor space and cubic feet of room space per person are necessary to good health. This assumes that good health in the population is a desirable goal, but we must make some assumptions if this discussion is not to be unduly protracted. The amount of space needed should be possible of empirical determination by medical experimentation, taking into account variations in climate, living habits, clothing, and similar factors.
2. The degree of ventilation necessary for health may be determined.
3. The housing should be sufficiently dry to preserve not only the health of the inmates but any furnishings, food, or other belongings kept in the house.
4. If the climate demands, some method of providing heat is needed, conditioned again by clothing and living habits.
5. The housing should be rodent and insect proof, again to protect health and property.

Other factors of a more complex nature could be brought into this list. Any mention of esthetic

121 satisfactions is also purposely avoided. It is hoped that, in the ensuing sections of the paper, it will be demonstrated that data on Tarascan housing can be presented sensibly in terms of these problems relative to costs, materials, skills, habits, and economic resources. Such a presentation should make it possible for administrators to set goals, and at the same time permit the scientist to establish the relative adequacy of the Tarascan adaptation to environment more explicitly than is usually done.

It perhaps must be emphasized that in the last analysis any system of values or goals chosen must rest with the administrative agency or agents, not with the investigator. It is obvious also that these values may be unduly influenced by the cultural background of the agents. Thus, a southern Californian might show a predilection for frame and stucco construction (or, if he is sensitive, a pronounced antipathy to such construction), while a New Yorker might prefer brick, and a Mexican might lean toward adobe or lime and stone. Such problems lie outside the immediate scope of our purpose. Rather we are concerned with ascertaining whether the data may be presented with reference to problem categories in such a way that the administrator can make a reasonable choice of values and a decision as to the means to be employed in achieving them.

An additional question is whether these data may be presented in such form as to be scientific in character and to meet the needs of the scientist in the pure sense. This is really a dual problem. The first is whether the collection of data for the two ends may reasonably be combined. The second is whether the presentation of data can be combined in a single report. It is our impression that the latter is more difficult than is the first. In any case, we believe we are in a good position to make the attempt. Although some of the funds used in the field work were supplied by a government agency, the Departmento Autónomo de Asuntos Indígenas, absolutely no restrictions were attached to their use, and no efforts were made to influence the place or the direction of the study. We also have little direct personal interest in the solution of the problems posed and can have little hope of influencing any administrative decisions on value standards. Consequently, our attitudes toward values or goals should be relatively neutral. With this lengthy discussion of theoretical problems, we turn now to the concrete attempt to put these ideas into practice.

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SCOPE OF THE STUDY

131 In the 16th century, the Tarascans occupied the State of Michoacán and some adjacent parts of Guanajuato, Jalisco, and Guerrero. Today they are reduced to part of central Michoacán, including the regions of Lake Pátzcuaro, Zacápu, La Cañada, and the Sierra. The present area extends from Lake Pátzcuaro on the east to near Los Reyes on the West, and from La Cañada south to Uruapan (fig. 1).

114 This study refers solely to the region where Tarascan is still spoken, and, more particularly,

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SCOPE OF
THE STUDY

114 to the Sierra. The town of Cherán is taken as the basis of investigation. Beals and McCorkle spent nearly 8 months in Cherán, in 1940–1941, although visiting other towns briefly. Carrasco spent some time in Cherán in January and February 1941, but spent most of his time in Angahuan, Capacuaro, and Chilchota. Carrasco also spent part of January and all of February 1942, in the field, working especially in Paracho, but visiting extensively in the Lake Pátzcuaro region. Towns visited for varying lengths of time

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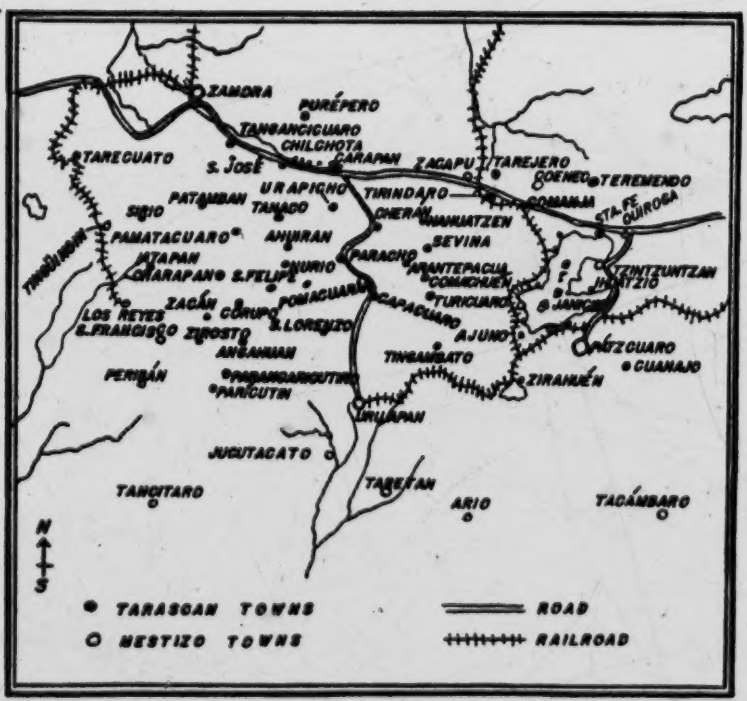

FIGURE 1.—Map of the modern Tarascan region.

[p.5c]

114 by one or more of the authors included the following:

Sierra region:
- Ahuiran
- Angahuan
- Aranza
- Capacuaro
- Charapan
- Cherán
- Cocucho
- Corupo
- Nahuatzen
- Nurió
- Paracho
- Parangaricutíro
- Paricutín
- Patamban
- Pomacuarán
- Quinseo
- San Felipe
- San Lorenzo
- Tarecuato
- Urapicho
- Zirosto

La Cañada:
- Acachuén
- Carapan
- Chilchota
- Huáncito
- Ichán
- Santo Tomás
- Tacuro
- Tanaquillo
- Urén
- Zopoco

Lake Pátzcuaro:
- Cucuchucho
- Huecorio
- Ihuatzio
- Janicho
- Jarácuaro
- Tecuena
- Tzentzénhuaro
- Tzintzuntzan
- Tzurumútaro
- Yunuán

[continued on p. 6b]

THE TARASCAN TOWN

361 Tarascan towns tend to be located on level, or relatively level ground. Exceptions are found only in a few villages located in the higher mountains such as Quinseo, Cocucho, and others. Ex-
[363] cept where the irregularities of the terrain prohibit, the towns are subdivided by streets forming rectangular blocks oriented approximately to the compass points (pl. 1, upper). This is undoubt-
[177] edly a reflection of the Spanish origins of these towns; in many of the settlements traditions of former locations still exist. The blocks are subdivided into lots, or *solares*, of quite variable size, which are used both as building sites and gardens. Usually, the lots are fenced, particularly on the side facing the street. Houses either may adjoin the street line or may be located well within the lot away from the street. In the center of the larger towns, structures are more apt to adjoin the street, but the doors of living quarters almost always open on the yard rather than the street.

In the Lake region, the fishing villages tend to
[363] be on the edge of the water. As a result, some of the smaller villages, such as Tecuena and Yunuán, do not have streets but merely paths. Where the ground is very uneven, as at Janicho

[p. 6a] [continued bottom of page 6-b]

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114 In the last area, information was also secured from residents of Cuanajo and Puácuaro, but these villages were not visited.

115 Many informants were used, but those most employed in Cherán were Pedro Chávez and Agustín Rangel; in Paracho, Maximino Estrada, master carpenter; and in Angahuan, the brothers José and Miguel Bravo.

104 Tarascan words are written in the alphabet approved by the Consejo de Lenguas Indígenas. Unless otherwise indicated, Tarascan words are from Paracho or Cherán (the two are only 6 miles apart, and dialect differences are slight). Spanish words are italicized, but if the word has a special regional meaning not found in standard dictionaries, it is placed in quotations and the meaning is explained the first time the word is used. Names of towns are in the local Spanish spelling.

THE TARASCAN TOWN

361 on the Lake and some of the Sierra villages, such as Urapicho, the plan is irregular and the streets have steps.

If the town is of any size, it usually is divided into from two to four districts known as *cuarteles*, or *barrios*. The town tends to center on a plaza, where usually is to be found a municipal building, the school, and the church, although the latter may not be directly upon the plaza. In most [764] cases, a fenced cemetery exists before the church, but in some towns it has been replaced by a new cemetery on the outskirts. A stone cross still stands in the center of the cemetery in most towns.

342 Two clearly defined types of construction exist in the Tarascan area: wood, and a combination of adobe bricks and stone masonry laid in adobe mortar. In the region of the Sierra, the majority of houses are of wood with shake roofs. Adobe-and-masonry construction with tile roofs predominates in the region around Lake Pátzcuaro, the district of Zacápu, the region known as La Cañada, and the district of Zamora. The division, however, is not absolute. Adobe-and-masonry structures, sometimes with tile roofs, sometimes with shake roofs, are found in most of the towns of the Sierra, especially in the larger settlements and

342 where Mestizo influence is marked. Nevertheless, in some towns, such as Capacuaro, almost the only nonwooden structure is the church. Structures of wood also occur in the other districts, although they are relatively rare.

The difference in materials used apparently has a geographic basis. The Sierra region has abundant forests, while often lacking sufficient water to permit easy manufacture of adobes or

[continued on p. 7b]

The Town of Cherán **THE TOWN**

361 The town of Cherán lies at the head of a broad valley about 1,300 feet (400 m.) above the valley
133 floor at an elevation of 8,500 feet (2,500 m.) (pl. 1, lower). The terrain slopes rather steeply toward the west. A small ravine forms the western half of the south boundary of the town; the eastern half of the south boundary lies beyond the ravine. A much larger ravine forms the north boundary of the town. A branch of this ravine runs through the town and partly isolates the northeast *barrio*, or *cuartel*. Springs at the bottom of this ravine
[312] afford part of the water supply. A pipe-and-wooden-trough system also brings water from a spring 9½ miles (15 km.) away to cement tanks in the approximate center of the town as well as to a fountain in the plaza, which lies north of the center.
[135] At the northeast is a small cinder cone, which affords most of the stone used for buildings and fences. The town encroaches on the slopes of the cone on the east and south. The northeast *barrio*, or *cuartel*, climbs part way up the slopes of another cinder cone.

363 Most of the streets of the town are oriented to the cardinal directions, and the central part of town is subdivided into rectangular blocks. In some sections irregularities of the terrain have led to modifications of the block plan; in these sections streets may follow the curving contours. Streets vary in width from mere pathways to about 40 feet (12.2 m.). In the heart of town they are often paved with small cobblestones and have a central drain or gutter. Stone-paved sidewalks are common in the middle of town. The main north–south street is traversed by the Carapan-Uruapan highway and was paved with oil macadam in 1940.

[p. 7a] [continued bottom of page 7-b]

342 tiles. The other areas have abundant water, but the forests are distant. An exception is the Sierra town of Tarecuato, where, despite abundant forests and the relative scarcity of water, most of the houses are of adobe. In the Sierra it is also becoming increasingly difficult to secure materials for large houses. This fact, together with Mestizo [177] influence, probably is contributing to the spread of adobe, or stone-and-adobe construction.

OF CHERÁN The Town of Cherán

361 The church, parish residence, school, and the municipal building all front on a central plaza. Except for benches and a fountain, the plaza is bare. Cement sidewalks and a surrounding 363 paved area are contributions from the highway construction.

361 The width of the building lots varies from 10 or 12 feet (3 to 3.6 m.) to almost an entire block. 351 The depth in most cases is half that of the block, but in some cases it may be little more than 20 feet (6 m.). As a general rule, however, except in the center of town, the lot is large enough for a small garden, a few fruit trees, and at least a small area devoted to growing types of corn not ordinarily cultivated in the fields (fig. 2). The size of lots varies appreciably, though, in various sections of town. There is no general rule for placing the house upon the lot except in the center of town, where it usually abuts the street, especially if it is of adobe-and-masonry construction. If the house does not front on the street, a fence, generally of stone, is built along the street line. It usually is designed to keep out all animals including pigs, and customarily is above head height so passers-by may not peer over. The interior boundaries are also fenced, but the fences are often less substantial (pls. 2, lower; 3).

351 The lots are all owned individually. They may be bought or sold freely and may be subdivided in 423 various ways. A man with a large lot may sell a portion, creating two lots. Sometimes a man who may wish to enlarge his holdings will buy a strip from an adjoining lot or even the entire lot and merge the two pieces into a single lot. Heirs may also divide lots.

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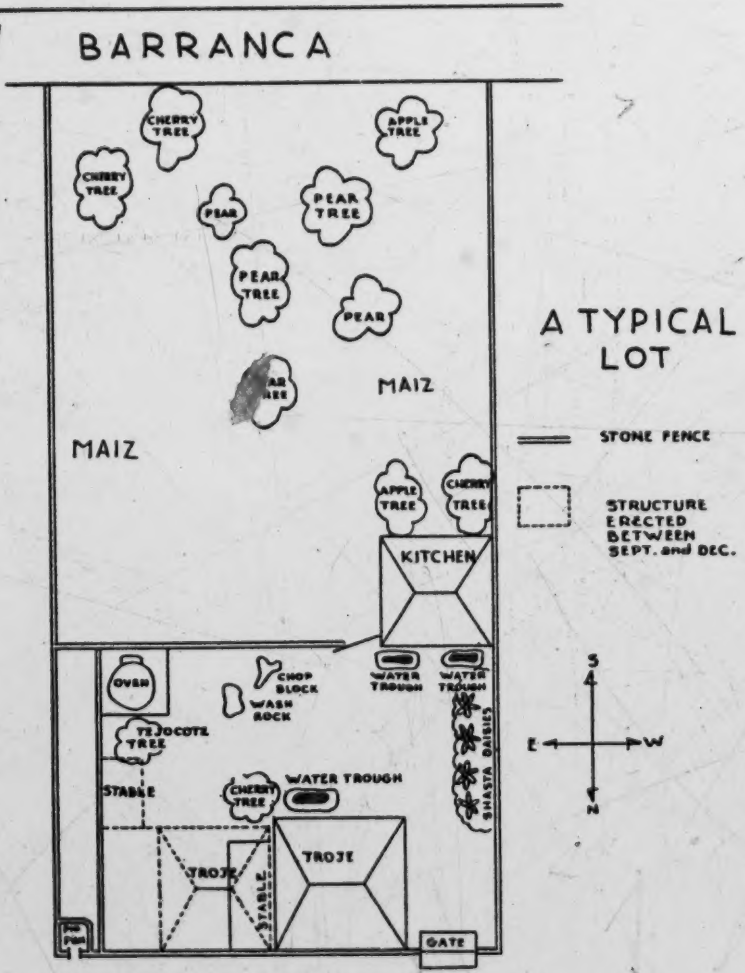

FIGURE 2.—Plan of a typical Cherán lot in the southeast section.

[p. 8]

3:Beals, Carrasco & McCorkle E-5 (1940-1942) 1944
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BUILDING MATERIALS
AND THEIR SOURCES
WOOD

313 All wooden materials used in Cherán are pro-
656 duced from local timber. The forests stand al-
most entirely on public lands considered to belong
[423] to the town. Formerly, exploitation of any sort
was open to all residents who had paid a small fee
to an administrative committee. The fee was
used to pay federal taxes on the land. Recently,
the Department of Forestry of the Federal Gov-
ernment has restricted exploitation of the forests
for any purpose other than the collection of fire-
wood to persons having permits. In Cherán this
[474] apparently will mean that persons wishing to cut
lumber or shakes (or make charcoal) must join a
local cooperative, for the Department of Forestry
has refused to give permits to any other group
or to individuals.

313 In general, the cutting of lumber is done by
335 specialists. Men who have no land or inadequate
land or, in some cases, men who prefer the activ-
ity, cut most of the timber and shape it into planks
and beams. Shake making is even more special-
ized, and men who make shakes may do nothing
else except look after whatever farm lands they
may own. Only a very poor person would attempt
to cut the planks and beams needed for a house if
he were not a specialist, but anyone might cut
poles and stringers used in the roof construction.

313 Woods used in house construction are pine and
137 fir. Pine is most used and two types are dis-
tinguished, red (iaríni), the heartwood of large
trees, and white, the sapwood of large trees or
wood from young trees. From these woods are
made shakes, *tejamanil*, "*vigas*" (any piece over
2 inches (5 cm.) in thickness), and planks, or
tablas.[1]

313 Trees are felled and trimmed with the ax. To
412 cut trees in sections, a two-handled saw is used
called a "*sardina*." Splitting is done with oak
wedges and an oak maul. Large pieces produced in
this fashion are sometimes dressed down with ax or
adze. Planks, or *tablas*, are sawed with a long two-
handled saw (k'eréri aráakutarakua). Logs des-
tined for planks are squared with the ax, marked

[1] The measure of length is the *vara*, which is divided in fourths or thirds. Each fourth contains eight English inches (20 cm.); so the *vara* equals 32 inches, or 81.28 cm. Fourths and inches are measured usually with the hand and fingers, but the span is also used.

BUILDING MATERIALS
AND THEIR SOURCES

313 by a chalk line, and then placed on a platform of
412 poles, sometimes with a pit underneath.[2]

Shakes, *tejamanil*, are made from both pine and fir. Fir shakes are preferred as they last longer despite breaking more easily. Trees used to make *tejamanil* must be straight-grained. The trunk is cut in sections with saw or ax; each section is then split lengthwise with wedges to produce a number of pieces, usually 8, each 4 fingers wide at the bark edge. These pieces are then split into 16 shakes. A special machete is used to start the split, which is then completed with a thin metal or wooden tool.

313 Several types of shakes are made. In Angahuan, a shake 5 *cuartas* (40 in.) long and 7 inches
438 wide is made to sell in Zamora and is called Zamorano. One shake 4 *cuartas* (32 in.) in length by 4 inches in width, called "little shake" (tasámbani sapírati), is sold in Uruapan, while one called "long shake" (tasámbani iórati), 6 *cuartas* (48 in.) by 1 *quarta* (8 in.), is used in the town itself. Cherán, on the other hand, uses a shake called "thick shake" (tasámani tiápiti), 5 *cuartas* (40 in.) in length. This is the size used in most Tarascan towns. Shakes are occasionally sold by the hundred, but the most common unit is a bundle of 400 (irépita).

412 Master carpenters may use an elaborate variety of modern tools for woodworking and house building. However, everything may be done in woodworking with ax, adze, saw, drill, chisel, and wooden wedges, and many persons work only with these tools.

ADOBE BRICKS

339 Adobe bricks are usually made from suitable earth near the village by specialists. The earth is mixed with manure and water to the proper consistency, then shaped in wooden forms. Two sizes of brick are made, one 3 spans long, one 2½ spans long. Adobes are laid by a mason in a mortar of adobe and manure. Because of the moist
333 climate, adobe walls always rest on a foundation of stone masonry laid in adobe mortar; the foundation may extend as much as half a meter (20 in.) below the ground surface.

[2] A fuller description of lumbering techniques will be given in a general monograph on Cherán in preparation.

339 In some towns, dried pine needles (*"huinomo"*), wheat, or oat straw are used in place of manure.
[192] In the Sierra, adobes are called adóbi; in Ihuatzio, on Lake Pátzcuaro, iauárukata.

STONE

316 Masonry is made of assorted-sized rocks brought
333 from a quarry in the west side of the cinder cone on the northwest edge of town. The stone is a porous soft reddish lava, easily broken or dressed roughly with a hammer. It is carried from the
[497] quarry on burros. The rocks are used for all types of masonry walls. Usually large sizes are employed near the bottom and to make the external faces of the wall; smaller stones are used to fill up the spaces, and usually all external surfaces are filled with small stone spalls set in the mud mortar.

316 Large stones used for foundations are a hard gray lava from the arroyo north of town or from the slopes of a cinder cone northeast of town.
[324] The same rock is employed for finished pieces of

[Continued on p. 106]

TYPES OF STRUCTURES

WOODEN STRUCTURES

343 Three main kinds of wooden structures are built. These are the *"troje,"* or house (trója; in Angahuan, ɣarímba), really a storehouse in use, the kitchen (kosína), and sheds used for storing fodder or sheltering animals. Normally, a mas-
[335] ter carpenter is employed; he usually works for an agreed price and hires a helper.

The *"troje"* is a rectangular structure, nearly square, consisting of one room with a loft over it (fig. 3; pl. 2, upper). The door is always in one of the long walls and there is usually an overhang of the roof, supported on pillars, forming a veranda on this side. Usually the flooring of the first floor is extended to form a floor for the veranda (fig. 3; pl. 4, lower, left).

343 The *"troje,"* or house, is elevated on large stones
335 (or stone pillars in some towns), usually 9 in number, one at each corner, one in the middle of each side, and one at the center of the floor. Upon the stones go four interlocking foundation beams, *"polines"* [3] (pɨɛ́kua), and a crosspiece destined to support the middle of the floor, the *"atravesaño de*

[Continued bottom page 106]

[3] Also "purinas," because they are usually made of heartwood (ɨsíni).

324 stone work used as doorjambs, door corners, and bases for the pillars of verandas where these rest on the ground.

TILE AND BRICK

339 Tile and brick are little used. Some tile roofs are seen and tiles are sometimes laid over a shake roof when the latter is worn out. Both tile and [317] brick are made from clay occuring near the town. The dry clay is brought to town on burros. The manufacture is carried on in an old chapel, and firing is in a kiln, both located in the church compound. The quality is poor and the demand is small.

MISCELLANEOUS

353 Adobe-and-masonry walls are commonly fin-
439 ished on the inside and, less frequently, on the
[338] outside, with a coat of sand and lime plaster. This material is always imported. So, too, are the pigments used in whitewash or kalsomine finishes employed to decorate plastered walls.

TYPES OF STRUCTURES

343

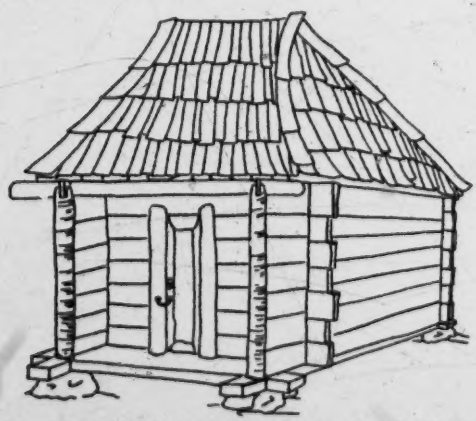

FIGURE 3.—Old "*troje*" in Cherán, said to have been built before the Revolution.

343 *la tarima*" (uanájɨukua). The foundation beams
335 are square, from a third to a fourth of a *vara* (about 8 to 10 inches) in cross section, but the crosspiece is thinner by the thickness of the floor boards.

The two longest foundation beams and the

[p. 10 b]

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343 crosspiece, "*atravesaño de la tarima*," are placed
335 first, then the two remaining foundation beams. The lower beams are notched at each intersection to half their thickness on the upper side; the upper beams are similarly notched on the lower side. Very frequently the front and back beams are notched to receive the ends of the floor planks (fig. 4; pl. 4, upper, left).

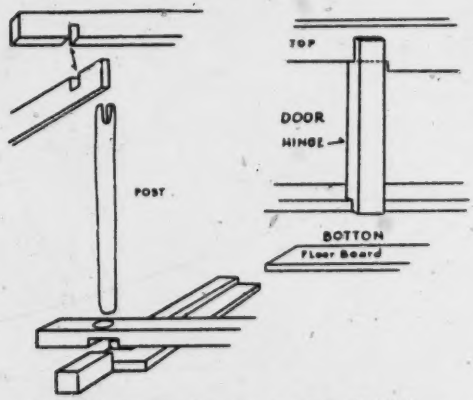

FIGURE 4.—Details of construction of the "*troje*" shown on figure 3.

Upon the foundation beams are placed the floor planks, "*tarima*" (tarújpani) (pl. 4, lower, right). Upon the floor planks are laid one or two more beams, "*planchitas*." One marks the line of the front wall with the door. If there is a wooden floor to the veranda, a second, somewhat heavier beam is laid at the outer edge (pl. 4, upper, right). These beams are morticed to received tenons on the lower ends of the pillars of the veranda and the side frames of the door.

The walls are of logs or, more commonly, of heavy planks set on edge. Both logs and planks are notched to interlock at the corners in the manner of the log cabin of North America and Europe. Assembling planks or logs in this fashion is spoken of as "to chain," "*encadenar*." Two methods of notching planks are used (fig. 5). The number of planks varies somewhat according to the total size of the house. The door is 9 *cuartas* (72 in.) in height, and the front wall up to this point is made of short planks. When four or five planks are in place, giving the required height for the door, the side frames of the door

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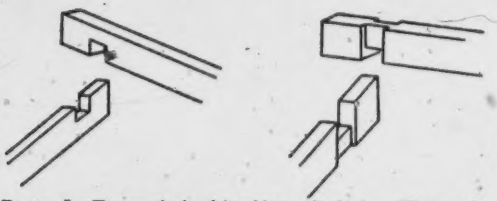

FIGURE 5.—Two methods of notching wall planks. That on the right is more recent and is a tighter fit.

(aŋamárakua) are put in place (pl. 4, lower, left). Each frame has a tenon at the bottom, fitting into a mortice in the "*planchita*," and a groove at the side to receive the wall planks.

Various methods of completing the doorframe are used. The simplest way is to notch the top of the doorframes to receive a long plank extending across the front of the house. Sometimes this plank is ornamented with carving; in this case it may be cut so the lower part is red heartwood, the upper part white sapwood. More often, the doorframe is finished with one or even two special pieces, "*arco de la puerta*" (uirímukua). These pieces are grooved to receive the upper wall planks (fig. 6).

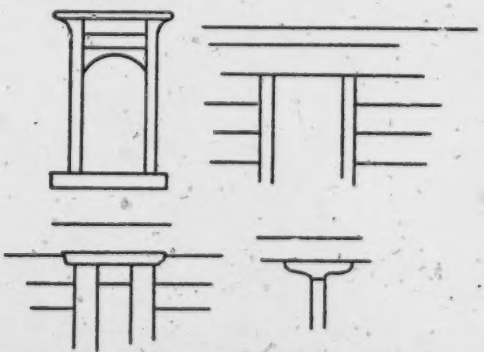

FIGURE 6.—Methods of finishing doorframes, windows, and pillars.

If the veranda is floored, usually four pillars rest on the forward "*planchita*." The pillars are made of heartwood and are usually round but occasionally spindle shaped. Each end has a tenon, the bottom tenon fitting into the "*planchita*" (pl. 4, upper, right), the upper into a capital, *zapata* (fig. 6), or directly into a roof beam, "*arco del portal*" (uanárukua). If no capital is used, the roof beam is often carved into an arch between

[p. 11b]

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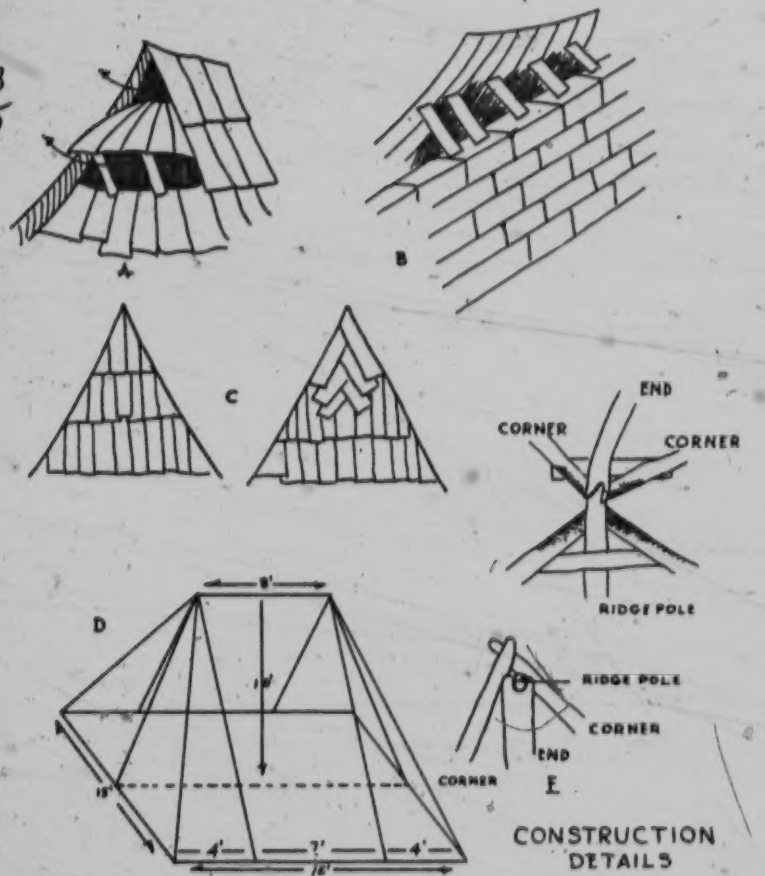

FIGURE 7.—Details of roof construction. *a*, Vent in roof of kitchen; *b*, lean-to kitchen built against an adobe wall with ventilation arrangement; *c*, two ways of finishing shakes at apex of an end roof section; *d*, arrangement of rafters in a small Cherán house; *e*, joining of rafters and ridge pole viewed from outside roof frame; and (above) same seen from inside roof frame.

[p. 12]

343
335 each pillar. In any case, carved ornamentation is common, often covering roof beam, capital, and even the upper part of the pillars (pl. 5, lower, right). The pillars at each end of the veranda usually have a groove to receive the ends of the side-wall beams.

The topmost two wall planks and the beam above the pillars are usually one *vara* longer than the others, and the ends are cut into a curve and often carved. In addition, a special carved piece of red heartwood called a "*cornisa*" may surmount the usual wall.

The top of the wall and the beam supported by the pillars in front of the veranda must now be carefully leveled again. A morticed cross beam, "*atravesaño del tapanco*" (uanáoekua), is generally placed in the middle of the room at the top of the walls. The ceiling is laid directly over the tops of the walls, and wooden pins attach the two outer planks to the walls. As the ceiling serves as the floor of the attic, the planks are usually of the same thickness as the lower floor. In one corner, almost always over the veranda, but occasionally inside the room, an opening is left to provide access to the loft or attic.

Upon the "*planchas*" is erected the frame of the roof. First are placed the "*tijeras*" (jauárakua) consisting of pairs of fir poles about 1½ *varas* apart. Half of the upper end of each pole is cut away, and the two are nailed together or, more commonly in Cherán, they are fastened with a wooden pin. The lower ends rest in sockets cut in the "*planchas*." Two pairs of rafters are now leaned toward each other and fastened together. Usually, three groups of rafters of four each are used. At each end of the house another rafter is now placed with a deep notch in the upper end. Within this notch is fitted a ridge pole (fig. 7, *d*, *e*). For further strength, pairs of rafters may be braced by crosspieces nailed to them below the apex of the roof.

In other towns the ridge pole is not used (pl. 5, lower, left). Additional smaller rafters may also be added after the main framework is erected, but in Cherán the house normally has 14 rafters of equal size, 3 groups of 4 and 1 at each end supporting a ridge pole.

Stringers, "*fajillas*" or "*costillas*" (látaas), are fastened horizontally to the rafters. The distance apart depends upon the length of shakes used. Nails are ordinarily employed now to fasten the

343 335 [824] stringers, but wooden pegs (tarúju) of pine heartwood or wild crabapple, or string of maguey or bark fibers, may be used. The method of attachment is such that each shed of the roof is a separate unit and, by removing the wooden pins, may be lifted off intact in case it is desired to move the house to another location (pl. 5, upper, right). The stringers are crudely made with ax or saw. They are not measured, but after fastening, any surplus length is cut off.

The shakes are laid in two layers with the thick sides facing in opposite directions (fig. 8). They

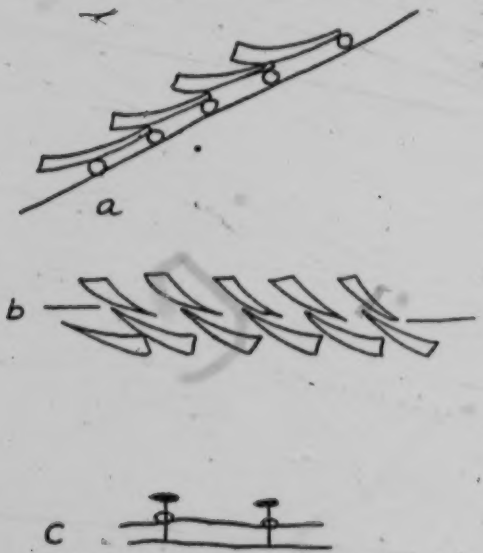

FIGURE 8.—Methods of attaching and laying shakes.

are fastened down now usually with 2- or 3-inch nails. However, they may also be fastened with small pins (piréntas) of red-pine wood, or, preferably, of wild crab apple, *tejocote*. If pins are employed, a hole is made with an awl. The shakes must be put on while green; otherwise splitting is excessive. If it is necessary to use old shakes, they are first soaked in water.

[824]

In addition to the above methods, shakes may be held in place by long thin strips of wood placed on top of the shakes. Stones are placed on the wooden strips at intervals. This method is rarely used now on houses, where the steep pitch of the roofs makes it rather insecure, but it is common on the roofs of sheds and stables and is not infre-

[p. 136]

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343 335 quent on the roofs of kitchens. If the much inferior pine shake is used, the nails usually are not driven all the way in and a length of wire is run from one nail to another, a turn being given about each nail (fig. 8, *c*). This may be done with fir shakes also, in which case the nails are driven all the way in after wiring.

The door is usually carefully made and is bought from a master carpenter. The hinges and latch are usually of metal, although the hardware may be crude. If a well-made door cannot be afforded, however, the door may consist merely of loose upright planks fitting in grooves at top and bottom.

A hinged trapdoor is placed in the opening to the loft. This is usually a well-built door bought from a carpenter and fastened by a stout padlock. A ladder gives access to the door. Sometimes the ladder is a notched log (kékua).

Thirty days is considered the minimum construction time for a house.

343 531 335 Some further general comments on houses, or "*trojes*," may be made. Houses with carved ornament are called "*trojes labradas*." The parts decorated may include the beam over the front pillars, the piece over the door, capitals, the upper part of the pillars, and "cornices," or special pieces along the upper walls. A "*troje labrada*" usually is carefully made throughout. Undecorated houses, "*trojes lisas*," may be made crudely with only ax and adze as tools. Small "*trojes lisas*" are virtually the only ones to lack a veranda. Occasionally, heavy planks are not used for the ceiling. Instead, light boards are laid over several cross beams, which also support the "*planchas*," or frames, holding the roof.

343 335 The size of the "*troje*" is taken from the length of the rear wall. Other dimensions vary according to table 1. Lengths in the table are in *varas*.

TABLE 1.—*Proportions of the houses, or "trojes"*

Length of long side	Length of short side	Height of wall	Rafters	Length of rafters	Shakes
Varas	*Varas*	*Varas*	*Number*	*Varas*	*Number*
6	4½	2½	14	3	400
8	5½	2¾	14	4½	800
7	6½	3	14	5	1,000
8	7½	3	18	6	1,200
9	8	3½	18	6	1,400

[p. 14a]

343 The measure of the back wall is also the length
335 of the front, center, and back foundation beams and the "*planchitas.*" The side-wall measure is the length of the short foundation beams; the floor planks are a little shorter. The top wall planks, cornices, the beam over the veranda pillars, the planks for the loft floor, and the "*planchas*" holding the ends of the rafters are all one *vara* longer than the corresponding measurements at the lower floor. "*Trojes*" of 6 or 7 *varas* are the most common.

493 A "*troje,*" or house, may be moved completely to a new location in from 1 to 1½ days. Each piece is marked as the structure is dismantled and then reassembled in the same order. As many of
[211] the men cannot read, the side boards are marked with a symbol for each side and then numbered by a series of tally lines. A master carpenter is hired primarily to supervise the work and to make sure that the foundation frame is level.
[602] Relatives of the owner do the rest of the work and are fed, but receive no pay.

343 A "*troje,*" or house, may last 50 to 100 years or more, if not destroyed by fire. Cases where "*trojes*" have lasted longer than 80 years are exceptional. However, the roof shakes must be replaced at intervals. Pine shakes last only about 6 years, fir shakes about 10 years.

342 Tarascan kitchens are of two types. The
335 simpler structure is called "*torita,*" or kosína tórueri in Cherán (kosína kukuarékata, in Angahuan). It has no loft or veranda. The floor plan is rectangular, with the door on one of the short sides. The roof has two sheds (fig. 9; pls. 5, upper, left; 6, upper, left). Subtypes may be distinguished according to the method of supporting the corner posts. In "*cocinas de pie derecho,*" the corner posts rest on wooden foundation beams, while in "*cocinas de horcón,*" the corner posts are set in the ground. Further differentiation may be made according to the presence or absence of a ridge pole.

The "*cocina de pie derecho*" starts with four foundation beams of heartwood, morticed at the corners and resting on four small stones. Four corner posts (*ayájtarakua*) of heartwood of pine are morticed into the foundation beams. The posts have grooves on two sides to receive the

[p. 14 b]

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A KITCHEN

FIGURE 9.—Kitchen of simpler style (kosína tórueri).

wall planks or boards. The side-wall planks run horizontally, while those at the two ends are vertical, resting in grooves cut in the foundation beams or made by strips of wood nailed to the beams. The door is in one end (center of a short dimension of the structure) and is framed in the same manner as is the house door.

The tops of the corner posts are notched to receive two "*remates*," planks longer than the planks of the side wall and forming the top of the side walls. The vertical planks forming the front and back walls fit into grooves cut in rectangular rafters supported by the corner posts.

If the roof has no ridge pole, the frame is formed by pairs of rafters resting on the top planks of the side wall and joined together at the top. To the rafters are fastened stringers to which the shakes are nailed. In case a ridge pole (uanájpikua) is used, it rests in notches cut in triangular pieces cal d "*burro*" or "*zoquete*" which are placed above the door and the center planks of the rear wall. The rafters then rest on the ridge pole and the top planks of the side wall. Such a kitchen takes about 15 days' labor to build.

In "*cocinas de horcon*," four square posts (ašáma) are set in the ground. Construction of the walls then proceeds in the fashion described above. This type of kitchen always has a ridge pole which is supported by two additional posts, one at each end. The door necessarily is at one side, not in the center as is usual in the "*cocina*

[p. 15a]

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342 335 *de pie derecho*." Both types have an earthen floor.

The above types are by far the most common and constitute the actual dwellings of the great majority of the Tarascans. Many variations from the described types occur due to differences in the skill of the builders and the economic resources of the owners. Dimensions vary according to table 2.

TABLE 2.—*Relative dimensions of kitchens in varas*

Short side	Long side	Height of wall	Length of rafters	Number of shakes [1]
4	4½	1½	3	600
5	6	1¾	3½	1,000

[1] This figure applies if a double layer of shakes is used; often only one layer is used, in which case the number of shakes is halved.

The more elaborate of the two types with its foundation beams, morticed corner posts, and roof without ridge pole, is said to be relatively modern. Formerly, no foundation beams were used; the corner posts were set in the ground, and a ridge pole was always present. The stringers were fastened to the rafters with wooden pins, while the shakes were fastened with wooden nails. Another way of fastening the shakes was to let the stringers project. Another stringer was then laid on the top of the shakes and the two tied together at the ends. Alternatively, the upper stringer might be held down with rocks.

Another and better type of kitchen is known as trója kosína or kosína uirípiti (round kitchen),[4] and more closely resembles the house, or "*troje*." The ground plan is square. The construction differs from the "*troje*" in only a few details. There is no loft and no veranda (pl. 6, upper, right). Two horizontal planks are morticed into the rear of the side walls and extend across the back of the kitchen to form two shelves. These shelves often occur in simpler kitchens, too.

The absence of the loft floor requires some change in the roof frame. Resting upon the uppermost planks of the wall are several cross beams. The simplest way is to place three beams running from front to back, one in the center and

[4] The term round is also applied to a type of square house (see p. 17). After much questioning, Carrasco was told the term round is used because the structures are square rather than rectangular. This sounds like a rationalization. Round houses probably occurred anciently, although apparently they were not common (see p. 33).

342 one over each side wall. Upon these are placed
335 the "*planchas*," and construction of the roof proceeds as in the "*troje*." In other cases, four squared beams are used. Two run from front to back, while two shorter beams run from the middle of each side wall to the nearest long beam (fig. 10). The "*planchas*" again rest on these. As in the "*troje*," the roofs have four sheds. A ventilator may be built in one shed (fig. 7, *a*, *b*).

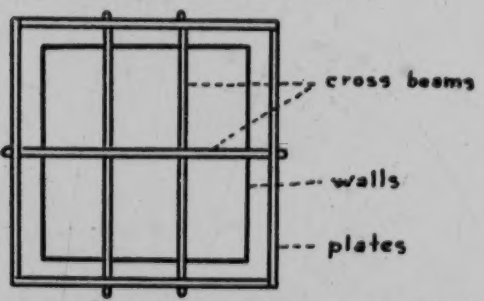

FIGURE 10.—Plan of ceiling in an elaborate kitchen (trója kosína).

The floor of these "round" kitchens is usually of earth owing to the character of the fireplace. In Paracho, however, a raised fireplace, called a "*chimenea*" (fig. 12), permits a wooden floor. Two additional foundation beams are placed as in figure 11. A wooden floor is then laid, leaving a space one meter square open for construction of the fireplace.

This type of kitchen varies from 4 to 7 *varas* in its longest dimension. As in the house, the topmost wall planks and the "*planchas*" are a *vara* longer than the other wall planks.

Although the kitchens, particularly the simpler type, are relatively inexpensive, they still may cost more than a man may be able to pay. In this case, he may construct one without the services of a carpenter. As a result, one sees all sorts of approximations of the types described. Perhaps most common is a structure in which the roof is supported by four posts set in the ground and the walls filled in with any convenient material—planks, lumber fragments, old shakes, and so on. A lean-to against a wall may also be used (fig. 7, *b*).

In Angahuan, and to a lesser extent in Parícutin and San Juan Parangaricutiro, storehouses (called úmutakata in Angahuan) are built on four posts some two meters (6 ft.) in height. Often these

[A16a]

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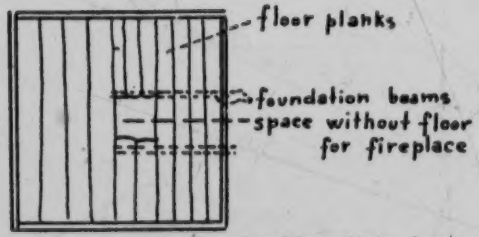

FIGURE 11.—Plan of floor of an elaborate kitchen (seen only in Paracho).

structures are at the entrance to the lot, but may also be inside (pl. 6, middle (right) and lower (left)). Two beams connect pairs of posts and a floor of planks is laid across these. Upon the planks rest four "*planchas*," supporting a roof similar to that of the "*troje*." The entrance is either through the floor or one of the gable ends. The floor plan is always rectangular.

[354]

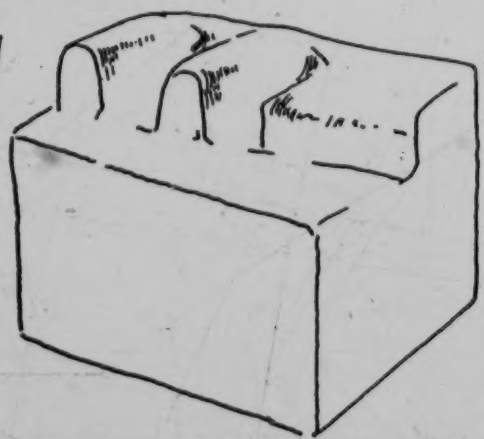

FIGURE 12.—A "*chimenea*," or raised fireplace (seen only in Paracho).

In Angahuan, the lower part of these structures is often walled and the structure then serves the function of a "*troje*." Often the walls are made simply of shakes or old boards, but sometimes the posts rest on foundation beams and the wall planks are well fitted (pl. 6, lower, center). In this case, the floor plan is square and, except for this, the structure is a "*troje*." Such square structures have a wide distribution and are called "*trojes*" in some towns, such as Paracho, but in Parícutin

[p. 16 b]

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9/2 they are called round houses (k'utá uiŕpiti). The
535 latter term is known but not used in other towns.

In Capacuaro occur storehouses, called "*kuxsi*" (uakáli), made of four walls of interlocked logs or planks with a simple roof of two sheds (pl. 6, lower, right). In some other towns, the same type is made in the fields. The structures are used to store wheat before threshing or to store straw for animals.

Occasionally, houses built on the edge of the street have the street wall of stone or stone and adobe, while the remaining walls are of wood.

In the Lake Pátzcuaro and La Cañada towns, a few old "*trojes*" are found. They resemble those of the Sierra but, except for two cases in Janicho, the roof is different. At either short end a triangular structure of adobe, "*capiesyo*," is erected on the wooden walls and sustains a ridge pole. Rafters run from the ridge pole to the "*planchas*," or plates, in front and back. Stringers attached to the rafters support a roof of either shakes or tile (pl. 6, middle, left).

ADOBE-AND-MASONRY HOUSES

9/2 In its simplest form, the house with walls of
333 stone (*ʒanʒákata*), "*casa de pared*," or stone and adobe, has one rectangular room with the door on one of the long sides. Occasionally, houses of more than one room are encountered or even of two stories. The latter seem very recent and commonly belong to Mestizos.

Masonry is always used as the foundation, "*reŕenchido*," of an adobe wall. In some cases,

[p 17a]

342 masonry is used to complete a wall; in others,
333 the upper part of the wall is completed in adobe brick. In the latter case, the stonework wall is carried up at least half a meter (20 in.) above ground level.

Masonry is always extended about 50 cm. (20 in.) below the ground surface, whether used only as a foundation or for the complete wall. The
[316] stone used is the volcanic tufa brought from a nearby cinder cone The walls are usually about 50 cm. (20 in.) in thickness. Larger stones are set with relatively flat faces outward. The flat faces will be dressed if this is imperative but no other shaping is done. To fill in irregular spaces in the wall face, stones of proper shape with one flat face are sought in the pile of materials. Small stone spalls are also employed abundantly to fill in any spaces between rocks. The mortar is of adobe mud mixed with animal dung, and the central part of the wall is filled in with irregular rocks and considerable quantities of mortar.

If the upper part of the wall is to be of adobe bricks, these also are laid in adobe mortar (fig. 13). Two sizes of brick are employed; the larger size results in a somewhat thicker wall. The mortar is the same as that employed for masonry. In the Sierra and on those islands in Lake Pátzcuaro where adobes are not made, the stone base is usually higher than elsewhere.

In construction, a professional mason is employed. He erects a frame to which strings are attached to keep the wall straight. He also uses a plumb line to keep the wall vertical. A trowel

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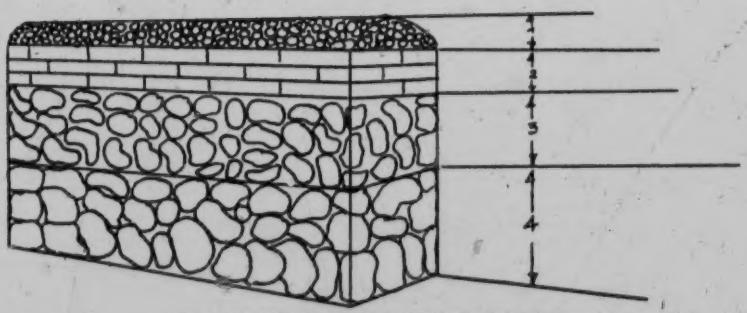

FIGURE 13.—Well-made masonry and adobe-brick wall in Cherán.

[p. 17c]

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342 and a hammer are the other needed tools. As the
333 wall increases in height, a crude scaffolding is erected, usually on each side of the wall, and the mortar is placed on a small portable platform of planks (pl. 7, upper, left [4]).

[338] Adobe-brick walls are frequently finished with a coating of adobe plaster, plentifully mixed with animal dung if the wall is to be used for a house. Somewhat less frequently, a lime-plaster coating is used to cover the wall.

342 In Cherán, usually only front and side walls of
335 houses are made of brick or masonry. The back wall, and sometimes one side wall, will be of upright planks fitting into grooves in horizontal beams at top and bottom. Doors have door-jambs of stone and the doorposts rest on a stone base with a mortice to receive a tenon on the lower part of the post. A lintel at the top is morticed to the doorposts and extends beyond them on either side, being surrounded by masonry or bricks and supporting the wall if it continues above the door. Windows are made in the same way, but no stone is used.

Upon the leveled tops of the wall are laid wooden plates, or "*planchas*" (in this case also called "*plantillas*"). Across these are square joists, extending 2 or 3 feet beyond the walls. The ends are ornamentally carved. Across the ends of the joists, a second plate is sometimes laid and fastened to the joists with wooden pins, which sometimes pass through the joists and extend below them. The rafters are set into sockets

[4] The making of adobes and tiles will be described in another paper.

342 in this plate, or may be pinned directly into
335 sockets in the joists. The frame consists of a ridge pole supported by pillars from the walls and joists. The rafters are in pairs resting on the ridge pole. In large structures with tile roofs, additional pillars or braces may support the rafters (pl. 7, upper, right). The ends of the gable roof thus formed are usually closed with shakes. Sometimes a floor is laid over the joists to form a loft. Yet another common variant is a shake roof with four sheds similar to the roof of the "*troje*" (pl. 7, lower, left).

The wide eaves of this type of house usually extend to the edge of the sidewalk, a very convenient arrangement in a rainy country, although the purpose probably is to keep moisture away from the walls. No other feature so strikingly sets off the architecture of central Michoacán from that of the remainder of Mexico than do these wide eaves (pl. 8, left). Structures fronting on the plaza often have a corridor with supporting pillars.

342 Many structures of masonry and adobe brick
[177] are approximating Mexican architecture in their ground plans, particularly if they are of any size. Usually two or more large rooms front on the street. A large entry way with double front doors, wide and high enough to permit the passage of animals, usually will be between two of the rooms. On the side facing the inner yard, there is a wide earth or brick-floored veranda (fig. 14). Doors and windows may open on both the street and the yard. Floors of such structures

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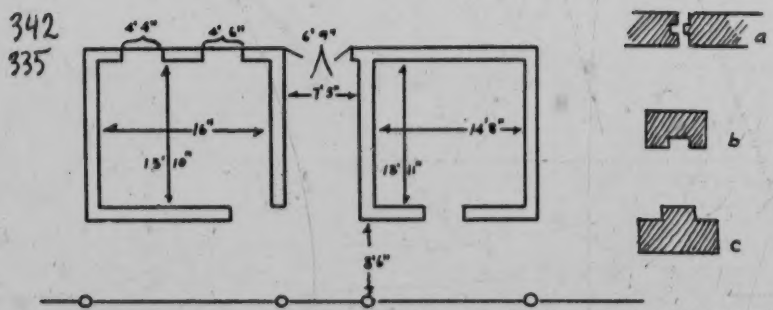

FIGURE 14.—Plan of house of Pedro Chávez, Charán. Combination masonry and wooden walls. *a* shows tongue-and-grooving of vertical plank walls. *b* and *c* show notching of beams at top and bottom to receive wall planks, and (*c*) floor planks.

[p. 18c]

342 occasionally are of brick or cement but ordinarily are of wooden planks. There is also usually a kitchen of wood in addition to the masonry-adobe structure. The latter is more difficult to maintain in order and there is a reluctance to smoke up the interior.

423 Certain customs connected with the erection of masonry-adobe walls should be mentioned.
333 Often a division wall is erected between the forward part of two lots which may later be used as a house wall by either or both lot owners. If the cost of such a wall is shared, half the wall rests on the land of each owner. As frequently happens, however, one householder pays all the cost. In this case, the entire width of the wall is on the land of the person not contributing money. The latter, however, may use the wall as part of a house wall at any later time.

342 In the Lake Pátzcuaro and La Cañada regions, house walls are almost always of adobe on a low
333 stone-masonry foundation. Usually the houses
335 have a veranda or corridor. The walls are erected as described. Five heavy planks then serve as plates, "*planchas*," one on top of each wall and one supported by pillars at the outside of the veranda. Sometimes there are capitals, *zapatas*, between the pillars and the plate. The plates at the two sides extend from the wall to the pillars, or the side walls are extended to the edge of the corridor. In this case, no corner pillars are needed (pl. 7, lower, right).

Upon the plates on the two shortest walls is erected a triangular adobe structure, "*capisayo*" (kenzéjtakua). Across the other plates are laid joists, in the more elaborate structures extending well beyond the rear wall and edge of the corridor, and carved at the ends. If the joists do not extend beyond the wall and corridor, the plates on the short sides may go only from the outer edge of the corridor to a point part way to the opposite side of the house. In this case, the "*capisayo*" may be partially an upward extension of the house wall.

342 If the loft space is not used, shakes may be laid on the joists to form a ceiling; often this is
335 done only over the veranda. Alternatively, a plank floor may be laid.

Should the house lack eaves, two heavy planks, "*pisos*," are placed on the ends of the joists. Upon these rest the rafters. If the eaves pro-

342 ject, then the "*pisos*" are usually higher, sup-
335 ported by the adobes of the "*capisayo*," and another heavy plank is placed on the ends of the joists. The space between the wall and the ends of the joists is usually covered with shakes. The lower end of the rafters is supported by the "*piso*," the upper by a ridge pole (pirijtákua in Ihuatzio). The latter in turn rests on two wooden pieces, "*burrito*," or "*zoquete*," forming the top of each triangular adobe "*capisayo*" (pl. 7, lower, right).

Although the preceding roof type is the most common, simpler types are known. In some cases, one wall is lower than the opposite wall and a single shed roof is formed by sloping joists. It should be observed that similar types of construction are used in La Cañada and at Tarecuato. Moreover, examples of all types of stone-
[171] and-adobe construction may be found in nearby Mestizo towns.

SUPPLEMENTARY STRUCTURES

351 Supplementary structures consist of fences,
333 gates, and sheds for storage or for shelter of animals. Fences facing on streets are the most elaborate as a rule. They may consist of dry rock walls made by the house owner, but in the central parts of town are almost always of masonry or masonry topped with adobe brick (pls. 2, lower; 3, right). They are called sérka. The construction differs in no way from that for house walls. The top is covered with shakes held down with a wooden stringer and stones. Adobe fences are most common in the Lake Pátzcuaro and La Cañada regions. Often fences of poles (uapótakua)
351 are employed to divide lots, or especially in the
335 outlying sections of town, along the streets (pl. 3, left). Poles may also be used to raise a masonry or adobe-brick wall somewhat higher, in which case a row of shakes will usually be employed to give privacy as well. No orthodox construction is used for pole structures. One attractive but not very practical fence was made of dry cornstalks bound neatly at top and bottom to small poles. A fence of upright poles or planks is called tirindikua.

Gates are usually quite elaborate and serve to close openings to the street. Commonly, the gate is a well-made door, purchased from a carpenter, and swinging from two substantial upright posts. These posts are set in the ground and in addition

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351/335 are connected by a piece of wood at top and bottom. Almost invariably they have a small gable roof (úmutakata in Angahuan, the name of the storehouses on posts already described). Two pieces are supported by the gate posts at right angles to the gate. The ends of these are connected with two pieces which support rafters. Construction is like that of a gabled house roof in miniature. Sometimes a light floor is laid, and the space is used to store maize husks for tamales or some similar, not very valuable, material. The gate roofs keep the gate from rotting or warping from rain. They are an inevitable part of the Tarascan landscape and may be seen sometimes in open fields over the entrance to the field even though there be no gate (pls. 3, right; 7, lower, left). In the Lake region, they are roofed with tile, a practice sometimes seen elsewhere (pl. 7, middle, right).

In some cases, however, simpler constructions are used. The gate may simply be upright planks resting in a groove at the bottom and held by cord loops at the top. In the fields, gates are often made by planting two posts with holes chopped in each to receive bars. Such gates are sometimes seen in town also. They are called "*agújas*" in Cherán, but in Parícutin they are called jarášurita.

[continued on p. 20b]

SPECIALIZATION AND DISTRIBUTION OF SKILLS

463 While a high degree of specialization is characteristic of the Tarascans in comparison with most primitive people, such a term is always relative. Actually almost any man in Cherán is first of all a farmer; only landless men, which means also poor men, are not farmers. Probably most Cherán men are fairly skilled with an ax, sufficiently so to do a reasonably competent job felling a tree, trimming poles, cutting fence posts or ties, and hewing out rough timbers. On the other hand, to make a living at woodworking occupations requires more skill and speed than would be possessed by many men. In the same way, any man might do a fair job of building a dry-stone field wall, but he would not be as fast as a specialist, nor could he put up a masonry wall or lay adobe bricks in a fashion that would meet Cherán standards of fitness. Nevertheless, these facts make an absolutely correct assessment of the

[p. 20a] [continued bottom of page 20b]

343 Sheds are usually built leaning against a house or wall. They consist ordinarily of only a sloping 335 roof of shakes supported by a crude home-made framework. The upper end of the roof rests against the house or wall, the lower end is supported by posts. A great variety of crudely built structures is found, serving for hen houses, barns, storage of fodder, or toilets. Crude roofs called "*pestaña*" are also built over entrances to houses and kitchens (pl. 2, upper).

343 Many houses have pigpens made of poles. These often have an entrance directly from the 231 street which can be closed from inside. As a rule pigs roam the streets during the day. At night they must be penned carefully, especially in the outskirts of town. Otherwise, coyotes may kill them.

354 In some house yards there are large domed ovens, used primarily for making bread. They [427] are often rented to bakers who do not have ovens. The construction is mostly of adobe but sometimes stone is used about the entrance and in foundations. A rough shake roof supported by poles protects the oven from the rain.

343 Temporary shades (ónjetarakua) are built of poles and covered with branches and grass for use in weddings and fiestas.

SPECIALIZATION AND DISTRIBUTION OF SKILLS

463 distribution of skills difficult. The following list of specialists, then, merely gives those who make a major part of their living from the specialty indicated. In some cases, the individuals no doubt get all their living from their professional occupation; in others, they either farm themselves, do farm work, or are employing farmers.

Carpenters	9
Masons	5
Brick and tile makers	2

The above represents a fairly accurate census of those men in Cherán who have special skills and who would be hired for work in their field by others if possible. To put it another way, the average man would recognize that one of these specialists would do a more competent and finished job than he could do himself; consequently, any ordinary man would make some sacrifices to employ these

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463 specialists. The situation in other Sierra towns is similar. In the Lake region as well, nearly every one can make adobes and erect a house of sorts, but good work requires a specialist.

000 In the Sierra, a master carpenter is usually em-

PRELIMINARY NOTES ON THE DISTRIBUTION OF TYPES

341 No complete survey of construction types has
184 yet been made but some general data are available. It is clear that many fundamental features of the architecture extend through not only large areas of the Tarascan country but also into adjoining regions settled by Mestizos. The type of masonry construction with tile or shake roofs and wide overhanging eaves extends far beyond the limits of Tarascan settlement, and the wide eaves are characteristic of even such a town as Morelia, the State capitol. In general, the higher, more heavily forested areas from at least as far west as Tingüindin to near Morelia show a predominance of wooden construction, usually with shake roofs. The lower and, in some instances, drier regions show a predominance of masonry-adobe structures with tile roofs and wide eaves. In some cases, shakes replace tile as roofing material. Distribution of the wide-eaved masonry-adobe style extends beyond the present Tarascan boundaries. It ends sharply west of Zamora, and it disappears east of Morelia.

The following tabulation shows the present

335 In the Sierra, a master carpenter is usually
465 employed on a contract basis. Often the carpenter employs a helper. In addition to their pay, the carpenter and helper are given their food. Adobe or stone structures are also built under contract, but in this case the workmen are not fed.

PRELIMINARY NOTES ON THE

DISTRIBUTION OF TYPES

341 known distribution of types within Tarascan
184 boundaries:

Mostly wood	*Mostly masonry-adobe*	*All masonry-adobe*
Ahuiran	Cuanajo	Cucuchucho
Angahuan	La Cañada (all towns)	Huecorio
Arantepakua	Puacuaro [2]	Ihuatzio
Aranza	Tarecuato	Janicho
Capacuaro	Uruapan [1] [2]	Jarácuaro [2]
Charapan	Zacápu [1]	Naranja
Cherán	Zamora [1]	Pareo
Cocucho		Pátzcuaro [1]
Corupo		Quiroga
Nahuatzen		Santa Fé
Nurió		Tarejero
Paracho		Tecuena
Parangaricutiro		Tiríndaro
Parícutin		Tzentzénhuaro
Patamban		Tzurumútaro
Pomacuarán		Yunuán
Quinseo		
San Felipe		
San Lorenzo		
Sevina		
Tucutacato		
Tingüindin		
Urapicho		
Zirosto		

[1] Indicates Mestizo town showing influence of styles.
[2] Indicates shake roofs common.

[p.21b]

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HOUSE

FURNISHINGS

342 The terms "house," or "*troje*," and "*cocina*" as
343 employed in the Sierra refer to the construction
196 of the house rather than to its use. Normally, each family has a house and a kitchen. In the kitchen, the family cooks, eats, and sleeps. The house serves as a storage place for all types of property. In it also is kept the image of the family saint. Sometimes in place of a "*troje*," a "*cocina de torito*" is floored and used for storage. Despite this shift in use, the structure is still called a "*cocina*," or kitchen.

343 The "*troje*" contains a minimum of furnishings.
363 The loft is used purely for crop storage and usually
778 has no furnishings whatever. The lower floor

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HOUSE
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778 generally has a table against the wall opposite the door upon which is placed the image of a saint, if the family owns or is carring for one. If not, a picture of a saint will be found behind the table on the wall. Usually, a variety of religious [353] pictures are tacked or pasted behind or around [373] the picture or image of the saint. Often candles and a pottery incense burner are on the table; in addition, the table may have a varying number of miscellaneous objects placed there temporarily for safekeeping. The ceiling, especially over the [353] altar table, may be decorated in colored tissue paper and strings of miniature household objects. Several wooden chairs with arms are kept in the

343 352 room, the number depending upon the economic status of the family. They are rarely used except to seat visitors. Tin trunks or wooden chests are usually found for storage of clothing. Clothing may also be hung on a pole extending from front to back wall. A sewing machine is a fairly common item of equipment. Rather rarely, the room will contain a wooden bedstead; this again is used

[404]

[354]

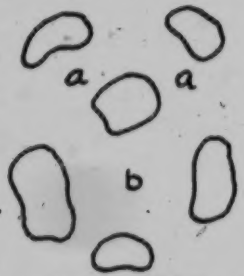

FIGURE 15.—Fire hearth of stones. *a*, Space for pots; *b*, space for *comal*.

only for guests, when mats are spread over the bed. In emergencies, the room may also be used for the storage of harvests. A portion of the veranda may also be boarded for this purpose. The second floor is customarily used to store maize on the cob.

[p. 22a]

354 The kitchen always has a hearth on the ground, usually made with six stones (paráŋgua), arranged as in figure 15. Infrequently, the hearth or stove is of clay (fig. 16). Space is provided for three fire places, one (fig. 15, *b*) for the *comal* or tortilla baking dish, and two (*a*–*a*) for cooking pots. This hearth is usually at one side of the structure.
[373] Near the fire a branched stick (čuríŋgu) is set in the ground; on this stick pitch-pine splinters (k'uerámu) are burned for light at night. At the
415 back of the kitchen are one or two shelves,
352 "*tinajera*," (plátu jatákua). On the upper are the old ollas and large vessels. On the bottom are new ollas (pureči), plates (plátu), jars (iɬamatarakua), wooden spoons (ioɾésa), and knives (kučó). Below the shelves on the ground, are the three-legged metates (iɲuári), *molcajetes* (jiúmatakua), *comales* (eróksa), and large water jugs (k'amúkua), including one set on a fiber ring (uanɬari) containing drinking water. Also on the ground are baskets (ɬakiáta), tortilla baskets ("tascal," kuatása), and gourds (uɾáni). Either on the floor or on the shelf may be wooden bowls (batieča), other types of baskets (ɬakiáta kanímu
[439] and šúndi, "*chúndi*"), and fire fans (p'unítatarakua). All the manufactured articles are imported.
352 The metate, when in use, is placed on a plank
[513] beside the fire. At night, it is removed and mats are spread out for sleeping.

[p. 22 b]

3; Beals, Carrasco & McCorkle E-5 (1940-1942)1944 NU34 Tarasco NU34
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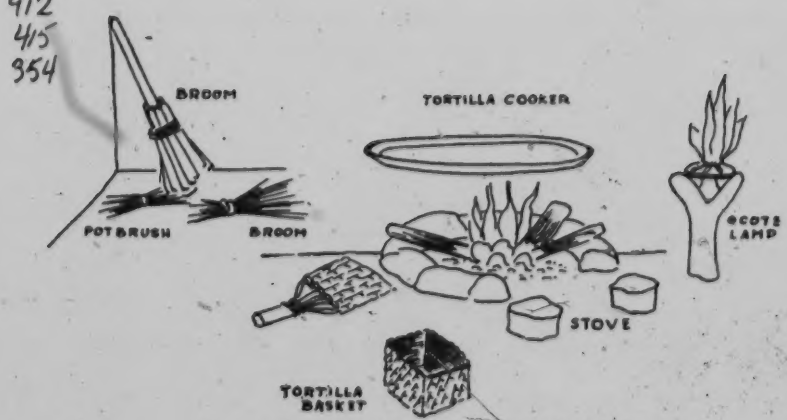

FIGURE 16.—Utensils and furnishings commonly found in a Cherán kitchen.

[p. 22c]

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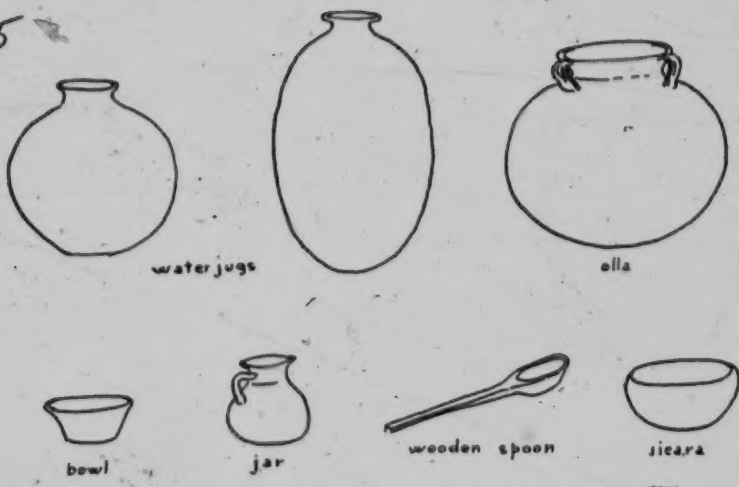

[285]

FIGURE 17.—Utensils commonly found in a Cherán kitchen.

[p. 23]

352 are spread out for sleeping. The women sit on
516 the ground in kneeling position; the men either sit on their heels or on low wooden benches (burítu) or low chairs (uaššánʒakua). In Parícutin, Ihuatzio, and some other towns, the
[532] benches are carved in zoomorphic forms. Hanging from the roof may be a shingle or small board on which to place small objects (sársu, *zarzo*). One or more wooden hooks (tirípatarskua) may hang from the ceiling. These and other items are illustrated in figures 16 and 17.

415 Usually outside the house there is one or more wooden troughs used for water storage (fig. 18).

In the Lake region, the furniture is similar, but
352 the clear-cut distinction in the use of structures is
342 lacking. Often one room serves all purposes.
184 If a separate kitchen exists, it may be just a lean-to against a wall of the house, open, or with
354 adobe walls. The use of the raised fireplace,

[Continued on p. 246]

ECONOMICS OF THE TARASCAN HOUSE

THE LOT

435 Lot prices vary considerably in Cherán. At the present time, the tendency is to sell lots by front footage in the central area, but square meters (39.3 in.^{2}) are sometimes used as a base for prices also. In the case of lower-priced lots, probably the price is not set in terms of any specific area or frontage, but is the subject of discussion and ultimate agreement. In general, lots (without buildings) which front on the main street were valued in 1940 at 25 pesos a meter (39.3 in.). On the outskirts of the town prices were about 10 to 12 pesos a meter (39.3 in.).

WOODEN HOUSES

COST OF MATERIALS

342 The following tabulation presents the cost of
435 those materials which ordinarily are purchased according to various estimates. Variations in price are partly due to differences in size and quality, partly to the bargaining skill of the buyer, partly to the need of the vender to sell.

Pine planks, per doz., f. o. b.[1]	*Price in pesos*
Seven-vara (6.44-m.) planks 15 inches wide, 3 inches thick, dozen	6. 60
Range of other estimates	7. 00–9. 00
Delivery charge, heavy planks, per dozen	7. 00

[1] Price is about the same for 1-inch planks, which are shorter and must be sawed, and long 2-inch planks, which are adzed.

3:Beals, Carrasco & McCorkle E-5 (1940-1942) 1944
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Sierra Tarascans
Pátzcuaro

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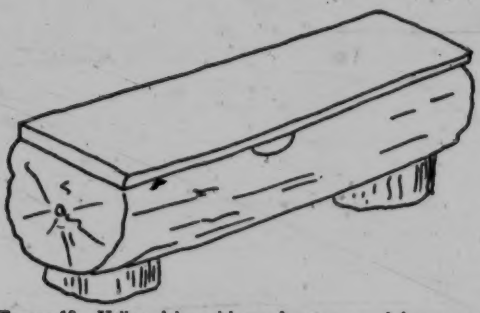

FIGURE 18.—Hollowed log with wooden cover used for storage of water outdoors.

354 "*chimenea*," is more common, and there often is also a special fireplace for the comal, a circular ridge of clay with an opening on one side to feed the fire similar to that shown for Cherán in figure 16.

ECONOMICS OF THE

TARASCAN HOUSE

	Price in pesos
435 Heavy square beams, each, f. o. b.	1. 50–2. 50
Delivery charge, each	1. 50
342 Veranda pillars, each, f. o. b.	1. 25–2. 00
Delivery charge, each	1. 25–1. 50
Shakes, bundle of 400	5. 00
Rafter poles, dozen	4. 00
Roof stringers, dozen	2. 50
Trap door	1. 50–3. 00
Door	2. 00–8. 00
Foundation stones, delivered average (2. 50 each)	9. 00–22. 50
Nails, per kilo	1. 00

Planks at Paracho were more costly in January 1942. Boards, six *varas* long, cost 0.75 to 1.25 pesos each, depending on width. Heavy planks cost according to length:

Length in *varas*:	Price in pesos
5	1. 50
6	1. 75
7	2. 00
8	2. 50
9	3. 00

Shakes, 5 *cuartas* (40 in.) in length; cost, 6 pesos per bundle of 400 (irépeta).

COST OF CONSTRUCTION

Table 3 represents the most accurate account secured of the materials, labor, and costs of a wooden house, or "*troje*." This house was built in July 1940 at Morelos 31. Its outside dimensions were 16 by 14 feet (6 by 5.2 *varas*), and it was raised off the ground about 18 inches (46 cm.)

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342 on nine large stones of hard gray rock brought from the barranca north of town. The porch was not floored. Other materials used were pine beams and planks, fir shingles, and nails. Doors were purchased ready-made.

TABLE 3.—*Materials, labor, and cost of constructing a wooden house, or "troje," at Morelos 31 in June 1940*

House parts	Materials used	Labor		Cost in pesos	
		In days	Description	Labor	Materials
Foundation	9 big stones [1]	½	Ox team and driver to haul.	[2] (2.50)	2.50
Foundation frame.	5 beams, 10×10 in.×16 ft. (0.25×0.25×4.9m.).				2.50
Roof base	4 beams, 8×8 in.×18 ft. (0.20×0.20×5.5 m.).				2.00
Floor	20 planks, 8×3 in.×16 ft. (0.20×0.067×4.9m.).	15	Straightening planks.	[2] 22.50	10.00
Walls	44 planks, 10×3 in.×16 ft. (0.25×0.067×4.9m.).				20.00
Ceiling	24 planks, 8×3 in.×18 ft. (0.20×0.067×5.5m.).				12.00
Door	1 wooden				3.00
Trap door	1 wooden				3.00
Porch-roof supports.	4 pillars, 9×9 in.×8 ft. (0.226×0.226×2.45m.).				6.00
Roof	15 poles				1.50
	18 stringers, 4–16 ft. long				3.50
	2,400 shakes, (6 irépitas)				30.00
Labor					
Carpenters		35	Contract	50.00	
Total		50½		72.50	103.00
Grand total		50½		175.50	

[1] Presumably quarried by builder.
[2] Included under cost of materials. *See* rocks for foundation.
[3] At rate of 5 pesos per dozen.

As in all other cases, informants did not include the cost of nails for fastening the roof shakes, the only place nails are employed. In this case, the builder made some of the planks, charging the value of his product into the estimates above. However, no costs were included for haulage, except possibly in the case of the pillars. If this was the case, the pillars were secured rather cheaply. We may, therefore, add the following items omitted in the above statement:

Additional costs:	*Price in pesos*
Nails, 3 kilos (probably a little generous)	3.00
Hauling beams and planks	60.00
Fiesta for roof raising	25.00
	88.00
Builder's estimate	175.50
Probable total if all labor paid for	263.50

In this case, probably the haulage was all done

[p. 25a]

435
342 by the builder, and there may have been no fiesta for the roof completion. The builder sold the structure for 200 pesos and estimated he had made a profit of 25 pesos, plus payment for his work as a plank maker.

To gain a clearer idea of the cost of a house, a summary of all detailed estimates is given below. Unfortunately, these may cover different-sized structures, but they are said to be for average-sized buildings. Items the owner may have provided are indicated, in which case in some estimates the low entry might be considered zero; however, as we are anxious to get an average cost, this point is omitted for the present.

TABLE 4.—*Summary of detailed estimates of cost (in pesos) of a house, Morelos 31, June 1940*

Item	Estimates	
	Lowest	Highest
Foundation stones	[1] 9.00	22.50
7 dozen planks	42.00	63.00
9–10 beams	4.50	15.00
1 door	2.00	8.00
1 trapdoor	1.50	3.00
4 pillars	4.00	6.00
13–15 poles (rafters)	[1] 1.50	4.00
19–42 roof stringers	[1] 3.50	15.00
5 to 6 trépitas (bundles) of shakes, best-quality fir	25.00	30.00
2–3 kilos of nails	2.00	3.00
Haulage of planks	[1] 49.00	49.00
Haulage of beams	[1] 15.00	15.00
Haulage of pillars	[1] 4.00	6.00
Straightening planks	21.00	30.00
Carpenter's fee	50.00	50.00
Roof raising fiesta	[2] 20.00	[3] 50.00
Total	254.00	368.50

[1] Items owner might provide himself.
[2] Without music.
[3] If relatives do not help.

The lowest figure given here may be further reduced, as suggested by the owner doing part of the work. If we reduce the lowest figure by deducting all the items which the normal Cherán man might do himself (if he owns oxen to do the haulage or may borrow them from friends or relatives) and eliminate the fiesta, we get the figure of 152 pesos. This is the least for which it would appear a Cherán resident may secure an averaged-size wooden house, or "*troje*," approximately 14 by 16 feet (4.27 by 4.88 meters).

This estimate of 152 pesos may be compared with gross estimates secured by McCorkle and Beals. These ranged from 180 to 300 pesos. Carrasco secured estimates of from 250 to 300 pesos. However, in every case where a gross

[p.256]

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342 estimate was obtained and then an itemized statement secured from the same informant, the total of the itemized statement ran well below the original gross figure given. A careful check of material costs indicates that the lower estimates probably are more nearly correct.

Detailed estimates on kitchens were not secured. A home-made affair could probably be made by any man by the purchase of two bundles (irépitas) of shakes for about 11 pesos (shakes 10 pesos, nails 1 peso).

One of several approaches used in getting costs was to secure estimates on a given section of wall for different types of construction. These estimates indicated that a 16½- by 16½- foot (5- by 5-m.) house, exclusive of roof, would cost 138 pesos; and a well-built kitchen the same size, 75 pesos, exclusive of the roof.

Carrasco secured estimates of 20 to 25 pesos for a poorly-made kitchen of the "*torito*" type in Cherán. The materials probably were second-hand. Even without any delivery charges, new materials would cost over 20 pesos, exclusive of labor. However, a "*torito*" could be built by most men without hiring a carpenter. A well-built "round house" kitchen, Carrasco was told, would cost about 100 pesos. This seems reasonable in terms of material and labor costs.

Carrasco secured comparative prices for Paracho which, considering the slightly higher cost of materials, probably are above the prices in Cherán. The figures also were obtained from a master carpenter, who obviously would have an interest in establishing higher prices.

	Labor cost	*Total cost in pesos*
Size of "*troje*" in *varas:*		
5	$60.00	250.00
6	90.00	300.00
7	110.00	400.00
8	130.00	500.00
9	150.00	600.00
Size of *troja kosina* in *varas:*		
4	30.00	60.00
5	45.00	85.00
6	70.00	125.00
7	100.00	182.00
Size of "*torito*" in *varas:*		
4	25.00	50.00
5	30.00	72.00

[p. 26 a]

3:Beals, Carrasco & McCorkle E-5 (1940-1942) 1944
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MASONRY-ADOBE STRUCTURES

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The costs of materials and labor in building masonry-adobe structures are as follows:

	Total cost in pesos
Adobes:	
Small size (2½ spans long) per 100 [1]	2. 50
Large size (3 spans long) per 100	3. 00
Laying adobes, average cost, small size, per 100:	
According to one informant	2. 00
According to another informant:	
To shoulder height	1. 00
Shoulder height to 9.8 ft. (3 m.)	1. 50
Above 9.8 ft. (3 m.)	2. 00
Manure for mortar (2 sacks per 100 adobes) per large sack (this may be furnished by the mason)	0. 25
Stones:	
Quarrying, per 100 [2]	2. 00
Transporting, per 100	2. 00
Mason's charges per sq. m. (householder to furnish water and materials)	1. 00
Roofing tiles, per 1,000	25. 00 to 30. 00
Bricks (mostly used for flooring or corners and doors in masonry structures) per 1,000	32. 00

[1] 100 adobes will make 43 sq. ft. (4 sq. m.) of wall; large-size adobes make a somewhat thicker wall.

[2] "100 stones" really means 50 burro loads and will make 42 to 83 sq. ft. (4 to 8 sq. m.) of wall.

Masonry appears to be somewhat more expensive than adobe construction. A wall 8 feet (2.46 m.) high, 16.5 feet (5 m.) long, and of normal construction with 1½ feet (½ m.) of masonry buried, would cost as follows:

	Price in pesos
Masonry-adobe (2 estimates)	19. 65 to 21. 00
With large adobes	23. 00
All masonry (1 estimate)	27. 00
The same extent of wall in the usual wooden house construction	23. 00

The best indication of costs of masonry-adobe houses is supplied by a study of the house of Pedro Chávez, school teacher of Cherán, under construction during 1940–41. The costs were checked in every possible way, in terms of materials and labor and also in units. It probably represents as accurate an estimate of costs as can be secured.

The house itself presents certain peculiarities. The front and side walls are of adobe brick on the usual masonry foundation. The ground plan consists of two rooms with an entryway, or

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3:Beals, Carrasco & McCorkle E-5 (1940-1942)1944
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342 *zaguán*, between them. The walls facing the
435 *zaguán* and the patio are of wood. A foundation of morticed beams resting on stones supports a wooden floor and walls. These beams are grooved as shown in figure 14. Wall boards are tongue-and-grooved, a type of construction used in Uruapan but new to Cherán. The wall boards are vertical and fit in a channel in the ceiling beams. One room has two windows opening on the street (fig. 14). The roof is of shakes. Chávez actually paid for only half of one side wall and nothing for the other (which rests entirely on his land), as his neighbor paid all the cost. In formulating the cost estimate, however, the wall was carefully measured, the number of adobes counted, and the cost of all masonry-and-adobe work was included in the total. All the woodwork was done on a
[675] definite contract which included wood materials, so it is unnecessary to itemize this.

	Costs in pesos
Masonry, 32 m. (106 ft.):	
Stone	24. 00
Mason's charges	32. 00
Adobe [1]	70. 00
Four stone bases for veranda pillars	10. 00
Zaguán door (not included in carpenter's contract)	25. 00
Carpenter's contract	275. 00
Shakes, best grade, 8 bundles	40. 00
12 kilos of nails	6. 00
Total	482. 00
Roofing fiesta (not including contributions of relatives)	30. 00
Total costs	512. 00

[1] 1,623 adobes were used; door and window openings make a lineal estimate impractical. This figure takes into account different mason's charges at different heights.

Two "*trojes*," or houses, of approximately the same size would cost between 500 and 600 pesos, but the above-described structure has much more loft storage space through utilization of the area over the entryway and veranda. The cost probably would be less if the interior walls were made of masonry and adobe. A tile roof would have cost between 100 and 120 pesos, adding 54 to 74 pesos to the cost. Its longer life would make it cheaper in the long run, however. The owner probably will lay a tile roof when the shake roof needs replacing. It should be remembered also that a kitchen will be employed apart from this structure.

[A279]

SUPPLEMENTARY STRUCTURES

435 351 The main supplementary structures to be considered are fences, gates, and sheds. The only fences involving expenditure are those of masonry-adobe. Costs are the same per meter as for a house wall.

The gate will vary in cost. Often it may consist of only a few planks, which may be second-hand material secured without cost, or even merely a pole or two laid horizontally across the opening. A well-made *zaguán* gate bought from a carpenter will cost about 17 pesos and up, depending on size. The balance of the gate, including the roof over it, will usually be constructed by the house owner. Ordinarily, the few shakes needed will be left over from house building or may be secured for a few cents.

435 343 Sheds are usually built by the householder. A sizable shed roof might require a bundle of shakes costing 5 pesos. No nails would be used, the shakes being held down by rough-hewn strips of pine and stones.

COMPARISON OF COSTS

435 342 It is clear from the foregoing data that a masonry-adobe structure is as cheap or slightly cheaper than a wooden house, or "*troje*." It also has more storage space. On the other hand, it requires somewhat more care in upkeep and also more expense to make it look "right" to the Tarascan. The interior, for example, should have a coat of plaster of either adobe or lime and sand. Preferably, so should the exterior. Both should also be whitewashed or kalsomined. None of these costs are included in the estimates.

435 342 An interesting comparison is made in table 5 of the costs of the following four categories of Tarascan houses:

511 (*a*) What the Tarascan would conceive to be the minimal shelter, which would be far below the Tarascan standard of decency.

(*b*) Housing considered a poor standard but not impossible.

(*c*) A respectable standard for a small family.

(*d*) A high standard for a small family.

Only people of some wealth normally use masonry-adobe structures; consequently, only in this category have I shown costs for this type of housing, without including any "frills" for decoration or finishing.

3:Beals, Carrasco & McCorkle E-5 (1940-1942)1944
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TABLE 5.—*Costs of housing in Cherán*

Category of housing	Description	Cost in pesos
a. Minimal	One poorly built "terše" kitchen	25–50
b. Low standard, small family.	One small troja kostna, or one "terše" kitchen and one small "traje."	175–200
c. Adequate standard, small family.	One medium troja kostna or "terše" kitchen and one medium "traje."	375–500
d. Wealthy	One large troja kostna and two good "trajes."	550–600
	One troja kostna and two-room masonry-adobe house.	750

These figures show a very wide range, yet they still do not represent the true situation. Actually, of course, if a poverty-stricken person can persuade

[continued on p. 28 b]

RELATION OF HOUSES TO SOCIAL AND ECONOMIC STATUS

342 556 Only in a general way is there correlation between house size and type to social and economic status. Very poor people would be in categories *a* or *b*. But relatively poor and relatively wealthy people will often be in class *c*. Where the family occupies a class *d* category, this will usually be owing to one, or a combination of the following things:

[592] 1. Size of household. Often two brothers, or a father and one or more married sons occupy the residence.

[continued bottom page 28 b]

[p. 28a]

3:Beals, Carrasco & McCorkle E-5 (1940-1942) 1944
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Sierra Tarascans

435 a relative or friend to permit him to use a bit of
342 land—as many do—the cost of minimal shelter
511 could be as low as $11. By begging scraps, even this figure could be reduced. Such a housing situation would, however, be regarded as "frightful" by all Tarascans.

At the other end of the scale, there are numerous Cherán residents who have much more costly establishments than those represented under *d*. Relatively few are in the condition of *b*; the great majority of Cherán residents would fall in category *c* and a fair proportion in category *d*. The discussion of house use will illustrate this point.

RELATION OF HOUSES TO
SOCIAL AND ECONOMIC STATUS

342 2. A special occupation, such as storekeeping, may be
556 followed.

3. There may be definite social pretensions. Of these three causes, the last seems least operative. Wealth is a necessary prerequisite to anything more elaborate than class *d* housing but wealth is often concealed. Numerous families in class *d* are far from wealthy by Cherán standards.

These judgments are somewhat subjective, but case material could be cited to support them.

[p. 28b]

3:Beals, Carrasco & McCorkle E-5(1940-1942)1944
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Sierra Tarascans

USES OF THE TARASCAN HOUSE

STORAGE

343 251 The Cherán house is really a storehouse. The loft and, sometimes, the lower floor are employed for storage of crops and food reserves. The lower floor is used for the storage of clothing, furniture not in immediate use, and for the family altar and the image of the saint. On occasion, it may be used as a sleeping room for guests. Supplementary sheds also may be used for crop storage, especially for fodder for animals.

SLEEPING AND COOKING

362 574 Cooking and eating is all done in the kitchen. Guests may be fed in the kitchen, outside, on the house veranda, or in the house. Female visitors are usually entertained in the kitchen. Male visitors are more apt to be entertained outdoors or on the house veranda, depending on the weather.

362 513 In mountain towns, sleeping is always in the

3:Beals, Carrasco & McCorkle E-5 (1940-1942) 1944
NU34 Tarasco NU34
Sierra Tarascans

USES OF THE
TARASCAN HOUSE

362 513 kitchen. With few exceptions, the entire family sleeps on mats about the fire. Cold weather and lack of bedding are given as the reasons for this. Even where a masonry-adobe structure with a bed exists, the family normally sleeps in the kitchen.

362 On ceremonial occasions modifications occur. The house to some extent becomes a center of activities, while cooking will move into the open or under supplementary sheds. These occasions are not many. In the main, family life takes place outdoors when the weather permits; in the kitchen when it does not. The term "house" in practice is a euphemism, and some members of the family may not enter the structure for days at a time.

592 362 125 HOUSE SIZE AND HOUSEHOLD SIZE

A survey of Cherán houses was made to determine the relationship between size of buildings

592 and the number of persons in the household. A
362 sampling technique was used, and about 5 percent
125 of the houses in each *barrio*, or *cuartel*, were measured and a census of their inhabitants taken. The only subjective factor in the study was the selection of houses for measurement. An effort was made to select houses in different classifications more or less in the proportions in which they seemed to occur in the *cuartel*. As this study was done only after several months of familiarity with the town, it is believed the subjective error is not large. Comparative data are given from the town of Sevina. In the latter town, two streets were selected, and data taken from every house on each of the two streets from the central plaza to the edge of town.

592 It is evident that in an appreciable number of
362 cases more than one family occupies a lot. This
[735] situation may be due to several causes. In some
[591] instances, it is a reflection of extreme poverty. In others, it results from sons remaining with their parents after marriage. In some instances also sons or sons and daughters may jointly occupy a lot inherited from their parents without subdividing the property.

362 In those cases where no house existed, 15 out
[735] of 52, poverty is indicated. It is true, however, that cases may exist where the person may be relatively comfortable financially and has not built a house because he has no agricultural land and hence no great need for storage space. In most cases where more than 1 family occupied a lot, there is a separate kitchen for each family. In the 22 cases in which more than 1 family occu-

362 pied a lot, 6 had no house. These cases must be ascribed to poverty in all probability. The same is true of the 4 cases where single families occupying a lot had no houses. The housing situation suggests, then, that 19.2 percent of Cherán residents are inadequately housed according to Cherán standards.

Considerable inequality in the amount of living space per person is evident, even when averages from the different *cuartels* are compared. This difference is even more marked in terms of the individual families. Individual households may vary from 179 square feet of living space per person to as little as 22 square feet per person. This inequality appears less marked, however, if only kitchen space is considered. In view of living habits, the amount of space per person in the kitchens is a more accurate indicator of living conditions. This also varies appreciably from household to household but the range appears to be from 14 square feet (1.3 sq. m.) of kitchen space per person in cases with a house also—or from about 20 square feet (1.85 sq. m.) in cases without a house—to as high as 95 square feet (8.82 sq. m.) per person. The smallest kitchens, with relation to number of persons, appear in cases with a house as well. However, the largest kitchen space appears in connection with households also having a house or houses.

It is probable that a number of these families are inadequately housed according to Tarascan standards, but no minimum figure can be set from present knowledge. An abstract minimum of the proper number of square feet per person

362
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TABLE 6.—*Data on Cherán houses showing relation between size of house and number of persons in household in comparison with similar data on Sevina houses*

Town and cuartel	Data													Remarks
	Lots	Houses measured	Families per lot		Persons per lot		House size per lot		Average living space		Average storage space per lot	Average kitchen area		
			Average	Range	Average	Range	Average	Range	Per lot	Per person		Per lot	Per person	
Cherán:	*No.*	*No.*	*No.*	*No.*	*No.*	*No.*	*Feet*	*Feet*	*Sq. ft.*	*Sq. ft.*	*Sq. ft.*	*Sq. ft.*	*Sq. ft.*	
Cuartel 1	190	16	1.7	1-3	6	3-11	12X14	9X9-18X18	288	50	134	107	40	6 out of 10 lots had no house.
Cuartel 2	280	13	1.0	1-3	5	3-16	14X18	11X9-28X40	340	68.5	170	143	28	4 out of 18 had no house.
Cuartel 3	300	17	1.65	1-3	5.67	3-10	15X17	12X13-36X32	480	80.3	300	184	30	3 out of 17 had no house.
Cuartel 4	270	13	1.6	1-3	5.25	3-9	12X11	9X9-32X28	220	45	78	90	19	2 out of 15 had no house.
Sevina	.....	15	1.4	1-3	4.67	3-6	13½X13½	9X7-30X22	432	97	288	.....	.....	

[p. 29C]

362 could be established, however, in which case the number of inadequately housed persons could be calculated from the data given.

362 184 Little comparative information is available on the subject of house use. In a number of areas where masonry-adobe structures predominate, however, it is apparent that the kitchen is not

[continued on p. 306]

CEREMONIAL AND SOCIAL FUNCTIONS RELATED TO THE TARASCAN HOUSE

CEREMONIES

342 Two ceremonial activities are common in connection with Cherán house construction. One is extremely simple; it consists of placing a cord, on which are tied several small bunches of flowers, over every door and window of the structure as the frame and lintel are completed. No particular beliefs connected with this could be discovered, but it is almost always done.

The second ceremonial event in connection with house building occurs when the shakes are placed on the roof. For such an event, called "*combate*," there is usually a sizeable fiesta, and most of the relatives of the owner come. Close relatives may also aid in the cost of the ceremony. In addition, the master builder and a corps of assistants attend the ceremony. It is virtually impossible to complete a house without holding this ceremony. In one case, an informant did not wish to give the ceremony (this occurred while working for the survey on which this paper is based), but first a cousin offered to supply the music for the fiesta, and then an uncle offered to supply the atole. Both insisted on knowing the date of the fiesta, and eventually the informant felt he had to hold it.

342 431 476 On the eve of the ceremony, the house owner takes about three packages of cigarettes and a box of matches to the master builder. With these, the builder invites his friends and relatives. If they accept an offered cigarette, they are obligated to appear to help finish the roof. The master builder, however, is obligated to respond to a similar invitation. These helpers nail on the shakes; the relatives of the house owner may assist in handing up the shakes and other needed materials, but they do not assist in the nailing.

All the relatives of the house owner are invited

[p. 30A]

362 used for sleeping ordinarily. This seems to be
184 true of the Lake, Zacápu, and Cañada sections. How far this is a function of the type of architecture and how far it is due to climatic conditions remains to be established. In general, the Sierra region is colder and sleeping is in the kitchen even where masonry-adobe buildings exist.

CEREMONIAL AND SOCIAL FUNCTIONS RELATED TO THE TARASCAN HOUSE

342 and are expected to attend or send excuses. When
431 they arrive, they give the householder or his wife
476 a package of cigarettes or 10 or 15 centavos, which is regarded as the equivalent of the package of cigarettes. The men present their cigarettes to the man of the house, the women to the wife.
[576] The man salutes those who make this present, tipping his hat and shaking hands. The women also shake hands and curtsey. The women help in the preparation of food, while the men help the master builder and his assistants with the roof.

342 After the work is well along, a bottle of *aguar-*
264 *diente*, or *charanda*, is circulated at intervals among those working. When the work is com-
476 pleted, the men are fed, then all the boys. They are all seated on two logs facing one another. Male relatives of the house owner assist in serving; sometimes a *compadre* will aid also if he is a particularly good friend of the householder. The women eat in a group near the fires where cooking
[262] is done. The food is the regular ceremonial food: tortillas, beef stew with chile and cabbage (čurípu), and tamales (kurúnda).

342 The master builder meanwhile leaves the house and shortly afterward returns with his wife and other immediate members of his family. They are seated on a mat facing the new house and are
[531] fed there. A cross with an arch over it, decorated with paper flowers, is set in the middle of the ridge of the roof. It is said to protect the house against violent storms and the devil.[6] The house

[6] Use of the cross on the house is common throughout the Tarascan area. In most of the Sierra towns, the crosses are only some 10 inches (25 cm.) in height, but in Particutin they are over a meter (39 in.) tall. Here the cross is placed against the house wall, and often with a vase or jar for flowers tied to it. Tile-roofed houses have the cross painted in white on the tiles, fastened to the wooden "shoe" supporting the ridge pole, or carved on the capital.

In Paracho, the priest is often brought to bless a new house. Two men go to request the priests' presence. They are regarded as godfathers of the house and become *compadres* of the house owner and the master carpenter.

342 owner, the master builder, and his helpers, and the nearer relatives of the house owner are now decorated with festoons of pieces of bread, some in the shape of animals, toasted wheat tortillas, and flowers. These are brought in a procession from the house of a relative. Women carry baskets on their heads and dance in the streets. The musicians accompany the party. The various articles are tied to the women's belts and then are hung about the necks of the men. These strings are called "*cuelgas*" (pl. 8, right). As a special guest, Beals was decorated with the others, and care was taken to explain to him that it was customary to return the belts. The master builder and, particularly, the house owner received several festoons of this kind.

Following this ceremony there was dancing, which lasted until late at night. In the particular [273] ceremony described, the householder drank very little. The next day several of the relatives returned with liquor and insisted that he get drunk with them as he had not drunk the day before.

483 The other major occasion on which ceremonies occur in connection with houses is when a house is 342 moved from one location to another. A man wishing to move a house to a new location hires a 476 master builder to supervise the work. He also invites all his relatives, who are obligated to come. The women aid in preparing food, while the men take apart the house, carry it to the new location, and erect it again. The house owner takes no part in this work; in fact, he is apt to become drunk and be something of a nuisance. The relatives are fed at midday and again in the evening, but they do not ordinarily drink much until evening. Even then most of them are apt to go home before eating or immediately after eating. Ordinarily, a house will be moved completely in 1 day; sometimes, however, part of the roof will be unfinished, in which case a few men will return the next day to complete the work.

A special feature observed at a house moving, but nowhere else, was the serving of tobacco from the lowlands and corn husks for rolling cigarettes. At all other ceremonies the host frequently passed around cigarettes, but they were of the usual commercial type.

342 The house is the center of numerous other festivities and ceremonials, but they do not pertain to the house directly. The major occasions are

3:Beals, Carrasco & McCorkle E-5(1940-1942)1944
NU34 Tarasco NU34
Sierra Tarascans

342 weddings, funerals, and *mayordomías*. In the latter type of ceremony, the image of a saint is kept in the house for a year. However, as the use of the house is incidental in all these cases, the ceremonies will not be described. It may be noted, however, that probably the image of a saint would not be entrusted to a family unless it had adequate housing for it Another special
342 feature in connection with weddings is also worth
585 mentioning. The most important ceremonial directly associated with a structure takes place, not in the house, but in the kitchen. This is a
[608] ceremony where all the close relatives of the bride and groom enter into the relationship of the *compadrazgo*, that is, they assume the relationship of godparents to each others' children.

SOCIAL FUNCTIONS

342 The house is involved in a number of social usages and obligations. As a piece of moveable property, it may be sold or inherited independently of the land on which it stands. Sale or inheritance follows the same rules as exist for other property, however. As these rules will be treated in another paper, they will not be repeated here.

Residence rules operate with respect to houses.
591 Normally, after marriage, the bride and groom live for a time in the house of the groom's father. This may continue for several years, but, usually after the birth of a child, if not before, an effort will be made to establish the son in a house of his own. This may be done merely by erecting a separate kitchen for the new household. Ideally, however, the son will have a lot, house, and kitchen of his own. In exceptional cases, however, the family remains as a unit until the death of the father. All the sons live on the same lot, and the father directs economic activities and controls the family treasury. Such a household is said always to separate after the death of the father.

Ownership of a house entails numerous com-
651 munity obligations. A house owner, first of all, must pay taxes to the Federal Government through the local tax office. A percentage of these taxes goes to the municipal government also. The house owner is responsible for the re-
364 pair and cleaning of the street in front of his property. This is not strictly enforced; only street cleaning is demanded and this ordinarily

[364] only on the days preceding a town fiesta. The
653 householder is also expected to work on certain community enterprises, such as repairing roads or bridges and the water system. Likewise, unless
625 he occupies some special position which exempts him, or is well along in years, he will be expected at times to join the *ronda*, or night watch, which polices his *cuartel*, or *barrio*.

Cherán is unique in its attitude toward visitors.
351 We have already mentioned the general occurrence of fences. These are usually high enough to prevent passers-by on the street from peering into the house yard. Visitors always knock at the
574 gate or call out, announcing themselves. As some-
609 times the inmates will not respond to a knock, the call is useful in getting a response. Unless the visitor is a relative, *compadre*, or neighbor

[continued on p.326]

RELATION OF THE TARASCAN HOUSE TO THE ENVIRONMENT
CHERÁN

The wooden house, or "*troje*," of Cherán is
362 relatively dry but, in the absence of any method of heating, it is uncomfortably cold most of the year, especially at night. The kitchen floor is
[354] frequently damp; although it is heated by fire, ventilation is inadequate, and the smoke often irritating to eyes and throat. On windy days, also, drafts whistle through cracks or under the lower edges of the walls. The masonry-adobe type of construction also presents drawbacks. It is not heated either and, while wind is less apt to penetrate, it is often unsatisfactorily ventilated. Moreover, the dampness climbs up through the walls at least 6 months of every year and into every corner of the room.

Probably the "*troje*," or house loft, can most
251 easily be made impervious to rodents if it be well
362 built, and if bunches of cactus be fastened at strategic points on the outside walls. Rarely, however, is this true. In addition, the roof often permits entry of birds, particularly half-wild domesticated pigeons, and scarcely ever is anything done to prevent their forays on the maize. It is doubtful if the masonry-adobe structure is superior in any respect for loft storage. For main-floor storage it probably is inferior owing to the greater dampness. [continued bottom of

[p. 324] page 326]

574 609 with whom especially friendly relations exist, normally the visitor is not invited into the house yard. Conversation takes place at the gate of the yard; if it bids fair to be protracted, the householder may even step into the street and continue the conversation there, closing the gate behind him.

351 574 184 So far as is known, customs in other mountain towns are similar in all respects except for the attitude toward visitors. In most towns fences are rarer than in Cherán, and the visitor is invited to enter. In Sevina, it is customary for the visitor to push open the gate, pass into the middle of the house yard, and then announce himself. Two Cherán men who accompanied Beals to Sevina, commented at length on this difference; they were quite plainly shocked at the custom.

RELATION OF THE TARASCAN HOUSE TO THE ENVIRONMENT

362 136 The major insect pests are fleas. In some villages there are also bedbugs. There seems little to choose between the various types of structures, although the earthen floor of the kitchen facilitates the activities of fleas. At certain seasons of the year, all Tarascan houses swarm with fleas to such an extent that the residents often cannot get a satisfactory night's sleep.

Apparently, the climatic conditions are not propitious for large numbers of houseflies or related species. Those that do exist, however, have free access into houses. Mosquitoes and other noxious insects are unknown at Cherán.

362 164 In the lack of good medical statistics, it is impossible to estimate the relation between health and housing conditions. Fleas may be responsible for the transmission of some cases of typhus and perhaps other diseases. Relative to most places in Mexico, however, insect-borne disease is probably at a minimum. Head lice and, to [515] some extent, body lice occur, despite thorough weekly baths, and the crowded living and sleeping conditions in the kitchen must facilitate transmission of the insects.

The most serious health hazards of the Tarascan house probably lie in the damp condition much of the year, lack of ventilation, and close crowding of the inmates, especially at night. These conditions facilitate the spread of all diseases trans-

362 mitted by contact and particularly respiratory
164 and pulmonary infections. Although data are lacking, a high incidence of tuberculosis is suspected. There seems little to choose between various house types for health.

COMPARATIVE DATA

184 Most Sierra towns, on superficial acquaintance,
362 seem to have similar conditions. Local variations, of course, occur as the result of differences in rainfall and temperature (functions of location and altitude) and the number of animals kept (causing variations in the number of flies).

[Continued on P.33b]

HISTORY OF THE TARASCAN HOUSE

342 In this section we try to determine the antiquity
173 of modern house types. We do not include all the data found in early sources referring to pre-Spanish houses and house uses, but base our study of the history of the Tarascan house on modern tradition and especially on the writings of the 16th century. Traditions appear to supply useful data concerning the last century or so. The houses of stone and adobe are usually considered to be relatively recent introductions in the Sierra region, but of older use in the Lake area.[2] This view is supported by the relatively greater frequency of stone and adobe in the towns showing most Mestizo influence. In the Lake region, it is remembered that wooden structures once were more frequent. In La Cañada, at Chilchota, the lack of adequate streets is referred to the older custom of building houses in the center of the lot.

Among the variant wooden-house types discussed, kitchens of poles and *"trojes"* and the trója kosína of logs are regarded as the oldest types. Tools, until recently were limited to the ax, adze, chisel, and awl. Shakes were fastened with wooden pins or stones.

Beyond a century, however, tradition is of no value. The pre-Hispanic Tarascans and those of a few generations ago are merged into *"los antepasados"* and, unless an historically known event is referred to, it is difficult to know to what period a tradition refers. So, even if data on

[1] This section is almost entirely the work of Pedro Carrasco.

[2] In this connection, it should be recalled that the Sierra uses the Spanish word adobe, while in the Lake area a native word (isurikata) is known.

3:Beals, Carrasco & McCorkle E-5 (1940-1942)1944
NU34 Tarasco NU34
Sierra Tarascans
Pátzcuaro
Cañada

362 In lower and drier areas such as La Cañada,
184 where different house types occur, information is inadequate to make any useful comparison. Masonry-adobe structures are probably less damp, but flies are more numerous. In the Lake region, there are also mosquitoes, apparently including those of the *Anopheles* genus. Dr. D. F. Rubín de la Borbolla tells us that in Tzintzutzan on Lake Pátzcuaro he suspects the population to be 100 percent infected with malaria. The cause of this, naturally, is only to a very slight extent related to housing conditions, although screening of sleeping quarters no doubt would somewhat lower the chances of infection.

HISTORY OF THE TARASCAN HOUSE[7]

342 houses of the *antepasados* were given, they would
[173] be untrustworthy.

Some of the data available from the 16th
342 century refer to a wider area than that covered
127 by this study. These include the "Relaciones geográficas"[9] of the 16th century and the dictionary of Gilberti.[10] The "Relación de Michoacán," on the other hand, refers only to events occurring about Lake Pátzcuaro.[11]

The "Relaciones geográficas," written about 1580, refer almost entirely to houses with adobe walls and straw roofs, adding that they often are small and of little shelter. In the valley of the Río Balsas, houses of *bajareque* (poles or canes interwoven and plastered with clay) are described but this type is not referred to in *tierra fría*. Sahagún remarks: "Sus casas eran lindas, aunque todas ellas de paja."[12]

In Gilberti, reference is also made to adobe (iauárukata), stone (tsintsicata), and wood ("tsirincata, *hacer casas de caña o palos*"; "tsirindacata, *casa así hecha*"). In addition to "quahta, *casa*" (today k'uta', in Angahuan), Gilberti gives "*casa pajiza*, quaqua, acarutaqua, acxcata."

The plates of the "Relación de Michoacán" show that houses usually had a rectangular floor plan or, perhaps, sometimes a round floor plan (fig. 19, *j*, *k*; *m* is described in the text as a provisional

[9] Relaciones geográficas de Michoacán, unpublished. Copy in the National Museum of Mexico.

[10] F. Maturino Gilberti. Vocabulario en lengua de Michoacán, México, 1559.

[11] Relación de las ceremonias y ritos y población y governación de los indios de la provincia de Michoacán. Morelia, 1903.

[12] Fr. Bernardino de Sahagún. Historia general de las cosas de Nueva España. T. 3, p. 135. Mexico, 1938.

Smith, Clarence & McCubbin E-S(1943-1945)1944
NU24 Tarasco NU24
Sinaloa Tarascos

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FIGURE 19.—Representations of houses in the plates of the "Relación de Michoacán."

shelter). The roofs appear to be of straw or palm, in some cases with a very large comb or crest undoubtedly resulting from the manner of interweaving the palm at the ridge of the roof. In other cases, the roof is pyramidal or conical and is surmounted by something which may be an inverted pottery vessel. This is what may be referred to by Gilberti: "hucahtsiqua, *un remate que se pone encima de la casa*," and "*chapitel de casa pajiza*, hucahtsiqua."[13] Verandas are depicted in the plates and references to them are made in the text.

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177

It is evident that modern houses do not correspond to those of the 16th century. Adobe walls may be pre-Hispanic, but the present methods of construction reveal Spanish influence.

[13] Hucahtsiqua (in the alphabet of the "Compás de Letrados Indígenas" p[ubli]cado) can be interpreted as "a thing placed on a summit."

[4.340]

3:Beals, Carrasco & McCorkle E-5 (1940-1942) 1944
NU34 Tarasco NU34
Sierra Tarascans

342 Tiles are unquestionably Spanish in origin, and
177 the architectural types of the Lake resemble Spanish types more than they do the illustrations of the "Relación de Michoacán."

342 Wooden houses are not mentioned in the
127 "Relaciones geográficas" (fig. 20). Although the *cabeceras* described in these Relaciones are not in the Sierra, part of their territories are in the Sierra and some subject villages were in the Sierra. For example, the "Relación de Peribán" says: "las casas deste dicho pueblo e sus sujetos son pequeños e de poco sustén e muy baxas, son cubiertas de paxa y los cimientos de piedra y las paredes de adobes e barro". Among the subject towns of Peribán were San Francisco, Atapan, Charapan, and San Lorenzo, all villages of the Sierra, as well as others not identificable because the native name is not given, but which, from their description, are evidently in the Sierra.

The sole modern construction which might have been in existence in the 16th century is the úmutakata, for in Gilberti occurs "tsirimba *troje asentado en cuarto palos*." The houses of canes and poles (tsirindacata of Gilberti) may have been similar, in a general way, to some modern kitchens of a simple type or to shelters.

342 The principal historical problem is to deter-
177 mine whether the shake roof and the log wall with interlocking corners is of European or pre-
171 Hispanic American origin. Both elements are well known in Europe and were introduced in North America, the interlocked log walls being brought by Swedish colonists to the Delaware River. In our case, information is scanty. We do not find references to log houses from before the Conquest or early Colonial times. As to the shakes, the question appears somewhat clearer. The Spanish and Tarascan words for shake (*tejamanil*, tasámani) are both derived from the Nautl tlaxamanilli, a descriptive word meaning "split thing." Nevertheless, shakes are known in Spain,[14] and their Spanish origin in Mexico is confirmed by the Relación of 1581 on the Taxco region near Michoacán, stating that shakes were used as covering for Spaniards' houses, those of the Indians being thatched.[15] A similar situation is found today in the Tsotsil region of

[14] In shepherds' huts of the Basque country. Anales del Museo de Pueblo Español, vol. 1, p. 91, pl. 7. 1931.
[15] Papeles de Nueva España, vol 6, p. 251. Madrid, 1905.

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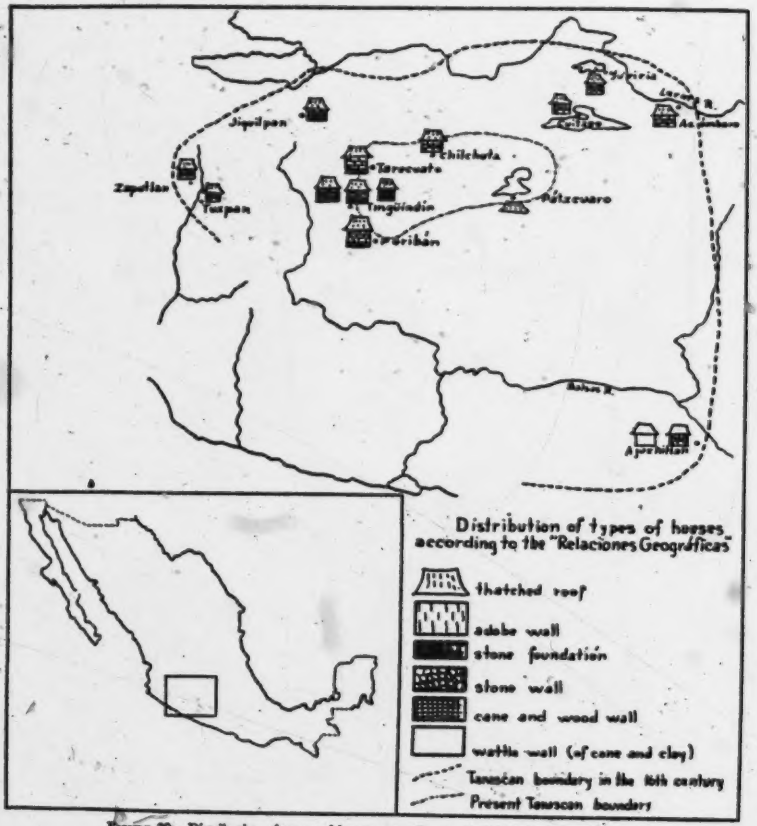

FIGURE 20.—Distribution of types of houses according to the "Relaciones geográficas."

[p.35]

342 Chiapas, where *ladinos* use tiles or shakes for
177 their houses while Indians continue to use thatch.
[171] It seems sound, then, to assume that shakes were introduced into Mexico by a small group of Spaniards, and that their use spread rapidly and intensely in wooded country. As shakes were probably unknown to a great part of the Spaniards, the Nauatl descriptive word prevailed over the Spanish one.

342 The history of shakes and of interlocked log
171 structures cannot, however, be resolved definitively without taking into account all the data from Middle America. At the present time, log structures are found among the Trique, Mixteca, and Mixe in Oaxaca; in the region between Perote and Jalapa, in the Sierra de Puebla; and among the Tepehuano and the Tarahumara. Shakes have a wider distribution.

343 The modern use of the Spanish word *troje* and
127 the Tarascan *tarímba* (in Angahuan) suggests that these were once granaries which have evolved into the modern wooden house. In the "Relación

[Continued on p.36b]

CONTEMPORARY TARASCAN HOUSING PROBLEMS

362 In the Introduction of this paper, a number of problems were discussed relating to the evaluation of Tarascan housing.

Although accurate determination of value standards for setting ideal goals for Tarascan houses is not pretended, some general conclusions seem possible. Tarascan houses are below the most desirable health standards from the standpoint of dryness, ventilation, protection from cold, and freedom from insects. In general, the wooden type of architecture is less damp and better ventilated. It is perhaps less warm, a deficiency compensated for by use of the fire in the kitchen, with the additional drawback, of course, of smoke irritation of the eyes and respiratory tract. There seems little to choose between the two types of construction from the standpoint of rodents and insects.

Economically, the masonry-adobe type of construction seems to be a little cheaper. For most Sierra Tarascans, however, this advantage is illusory and only holds for those who can afford to hire all the labor done. The masonry-adobe construction calls for the employment of specialists throughout. Most Sierra Tarascan males, on

[p.36a] [Continued bottom of page 36b]

343 de Michoacán" we read about *trojes* for storing
127 food, clothes, and idols, but no reference is made to the shape or building materials of these *trojes*. Probably we have here a precedent to the clear-cut distinction between *troje* and *cocina* of the modern Sierra Tarascans.

342 To summarize, we may conclude that the pre-
174 Hispanic houses were predominantly of adobe,
177 with thatched, four-shed roofs. The Spaniards introduced tile roofs and modifications in the architectural type. On the other hand, new iron tools and building techniques (shakes and probably interlocking logs) favored the use of wood in construction on a large scale. Although wooden houses have their center of distribution in the Sierra, they are still found in the regions of Uruapan, La Cañada, Lake Pátzcuaro, and elsewhere, once having been much more common in those districts. With timber becoming increasingly scarce, adobe construction has virtually displaced wood in the adjoining districts and is invading the Sierra.

CONTEMPORARY TARASCAN
HOUSING PROBLEMS

362 the other hand, are capable of doing a considerable amount of the necessary work on a wooden structure. For those below the higher economic levels, then, it is probable that wooden structures are potentially less expensive than are those of masonry and adobe. In other words, in terms of the distribution of skills within the population, wooden structures are more apt to produce adequate housing if space be the main objective. It should be observed, however, that this probably is not true in many Lake and Cañada villages, where access to timber is absent or difficult, but skill in making adobe bricks is common.

As has been indicated, about 20 percent of the population of Cherán is inadequately housed according to Tarascan standards. For these, any change in housing conditions quite obviously is related to wider economic problems and conditions. What of the other 80 percent according to ideal standards? Until medical determination is made of the proper amount of living space per person in the Tarascan climate, no complete answer to this question can be made. It can be asserted, however, that better housing is possible for most of this 80 percent if two things could be accom-

362 plished: changes in construction methods, and changes in living habits and house use.

One needed alteration in construction methods is in the direction of better ventilation for living quarters. This means more ventilation for masonry-adobe structures and better controlled ventilation for wooden structures (including adequate smoke-venting). Moisture-proof concrete foundations for masonry-adobe structures would remove a major drawback to this type of construction. Neither of these changes would increase costs beyond the reach of most of the 80 percent who approach present Cherán standards of adequate housing. In less prosperous towns, however, the added expense of concrete foundations would be more serious, particularly in towns not accessible by road.

In Cherán, living habits are a more serious drawback to adequate housing conditions than are economic factors (always excepting the lower 20 percent). As has been shown, actual living goes on in the kitchen, which serves for both eating and sleeping. Much potential living space thus is unused. Whether a wooden or a masonry-adobe house is owned, it is not used for any part

[p. 37a]

3:Beals, Carrasco & McCorkle E-5 (1940-1942) 1944
NU34 Tarasco NU34
Sierra Tarascans

362 of healthful living. The problem, then, is to secure use of more of the available living space. This may prove more difficult than providing additional living space. It is our impression that the answer to this problem lies partly in introducing practical, economical, and cleanly ways of heating parts of the buildings other than the kitchen, partly in persuading Tarascans to purchase and care for additional bedding and clothing. Economically, the introduction of heating would be easier for the Sierra Tarascans (who can cut their own wood) than would the purchase of more bedding and clothing. Introduction of adequate care for bedding likewise would be difficult.

Essentially, then, for the majority of the Cherán population, improvement of housing conditions is not an economic problem. Rather is it a problem of altering basic patterns of culture. It may be concluded, therefore, that in addition to the economic betterment of the lower segments of the population, a program of education and directed acculturation is required. The housing problems consequently merge into the wider problems of education and culture change.

[p. 37b]

U. S. GOVERNMENT PRINTING OFFICE: 1944

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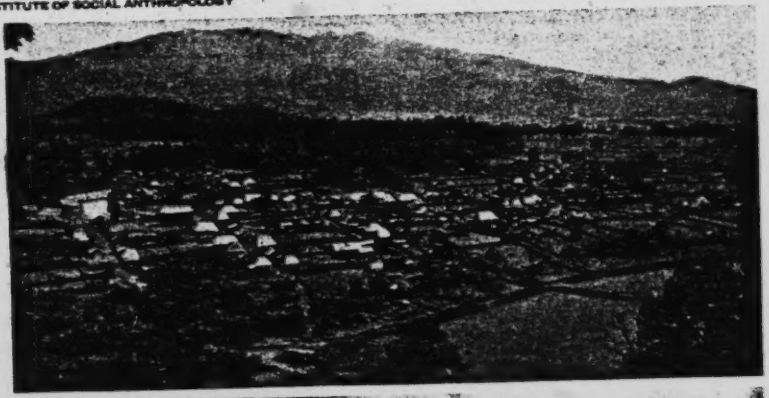

[342]

Upper: Angahuan, showing the rectangular arrangement of streets and the large lots. *Lower:* A portion of the town of Cherán, viewed from the hill in the northwest section, which furnishes most of the stone used in building.

[End plate 1]

3: Beals, Carrasco & McCorkle E-5 (1940-1942)1944 NU34 Tarasco NU34
Sierra Tarascans

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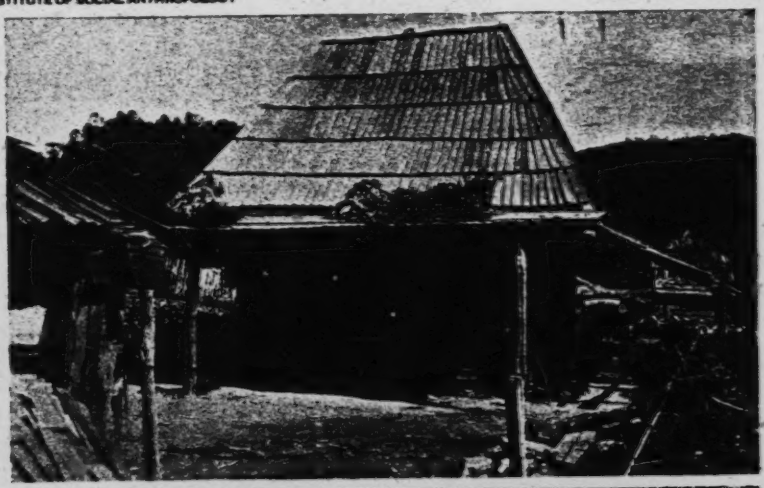

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Upper: "*Troje*" in Angahuan with *ciñuel* in front in place of a veranda. *Lower:* A street on the outskirts of the town of Cherán. Fences are carefully built of dry stone, supplemented by poles.

[End plate 2]

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3: Beals, Carrasco & McCorkle E-5 (1940-1942)1944 NU34 Tarasco NU34
Sierra Tarascans

Right: Street near the plaza in Cherán. A stone-and-adobe whitewashed structure is visible near the church. The center shows a well-built stone-and-adobe fence capped with straw and shakes, while the houses are of wood. A typical roofed gate is visible left of center. *Left:* Two types of pole fence in Capacuaro. In Cherán such fences are usually found only between lots.

[End plate 3]

Upper (left): Leveling the foundation beams for a house. *Upper (right):* The "*plancha*" in position. Two side wall planks and one front wall plank in place. Notice the mortice for a pillar in the front "*plancha*." *Lower (left):* Placing one of the doorframes. *Lower (right):* Laying the floor boards of a house.

[End plate 4]

3: Beals, Carrasco & McCorkle E-5 (1940-1942)1944 NU34 Tarasco NU34
Sierra Tarascans

3: Beals, Carrasco & McCorkle E-5 (1940-1942)1944 NU34 Tarasco NU34
Sierra Tarascans

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[483]

Upper (left): Simple kitchen under construction in Cherán, "*pie derecho*" type. *Upper (right):* Two roof sections in place in process of moving a Cherán house. *Lower (left):* Arrangement of rafters in Paracho house without ridge pole. *Lower (right):* Old house in Paracho of unusual style. The elaborate carving and absence of capitals of the pillars should be noticed. The walls are of vertical planks rather than the normal horizontal construction.

[End plate 5]

3: Beals, Carrasco & McCorkle E-5 (1940-1942)1944 NU34 Tarasco NU34
Sierra Tarascans

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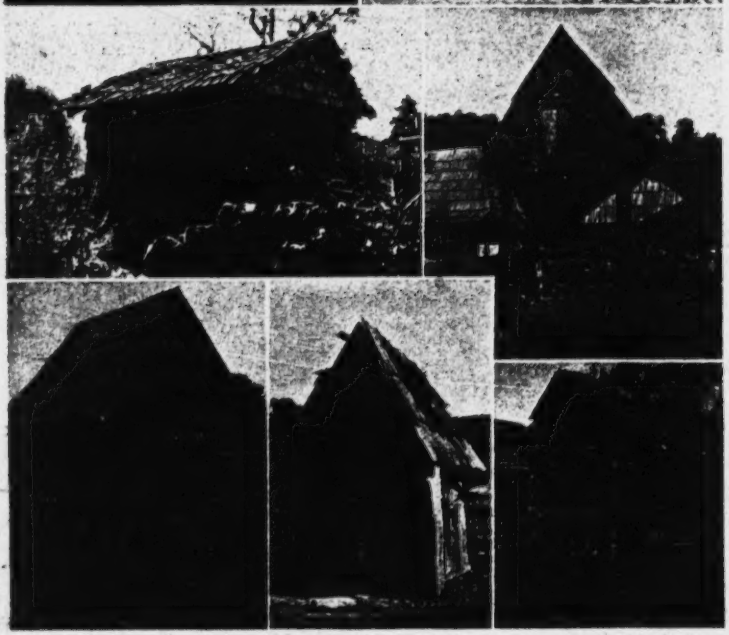

Upper (left): Kitchen of simple type with corner posts (Angahuan). *Upper (right):* Kitchen of elaborate type (Angahuan). The gate or half door is rare in Cherán. *Middle (left):* Wooden "trap" at Ihuatzio, Lake Pátzcuaro, with the roof and adobe support for the ridge pole. *Middle (right):* Storehouse of style found mainly in Angahuan (Jacalteban). *Lower (left):* Large storehouse (Jacalteban) over gate. *Lower (center):* Storehouse (Jacalteban) with lower part made into a room. *Lower (right):* Storehouse (adobe) in Capacuaro.

[End plate 6]

3: Beals, Carrasco & McCorkle E-5 (1940-1942)1944 NU34 Tarasco NU34
Sierra Tarascans

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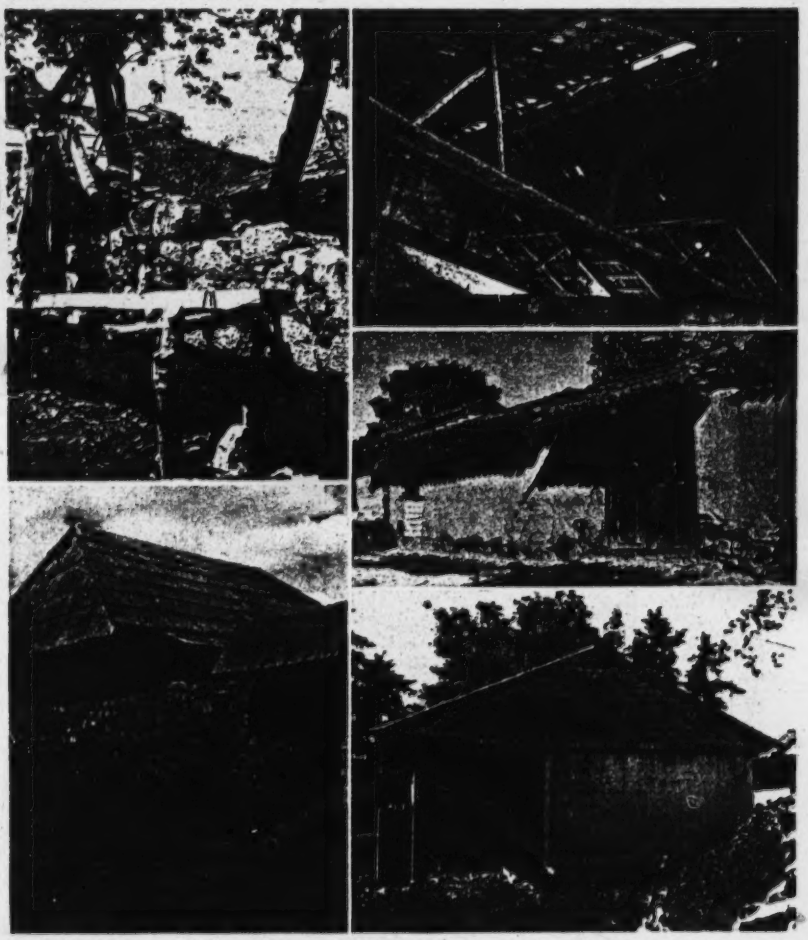
[333]



Upper (left): Mason at work in Cherán. *Upper (right):* Fairly elaborate roof construction at Ihuatzio typical of adobe structures. *Middle (right):* Gate roofed with tile, Ihuatzio. *Lower (left):* Stone house at Paracho with shake roof of "*troje*" style. *Lower (right):* Ihuatzio house with veranda, seen from one end. The "*planchas*," or plate, is carried clear across the house in this case and doubled at the ends. The wooden support, or "*barrio*," for the ridge pole is clearly seen.

[End plate 7]

Left: A well-built stone structure in Paracho with the wide eaves characteristic of Central Michoacán. *Right:* Scene in a house-roofing fiesta in Cherán. The house owner is in the foreground bedecked with strings of bread and flowers; the relatives are in the background.

[End plate 8]